TOSHIBA

SERVICE MANUAL

HDD/DVD VIDEO RECORDER

RD-XS24SB
RD-XS24SF
RD-XS24SG

NOV. 2005 (SA)

CONTENTS

1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 230V(220V ~ 240V) AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.
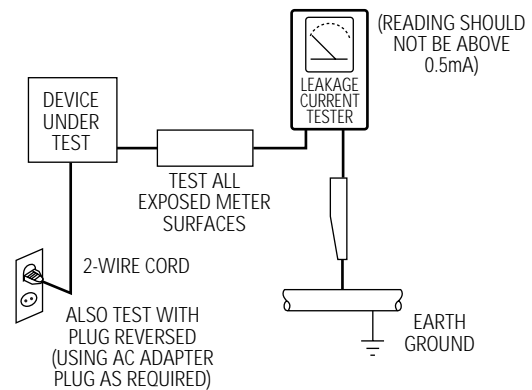

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.
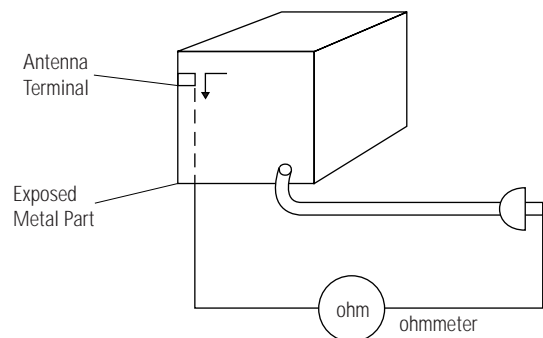

Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas: (1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚠)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

   b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

   c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

   d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by($\triangle$) or by ($\triangle$) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

2. Product Specification

	MODEL NAME	RD-XS24SB	RD-XS24SF	RD-XS24SG
General	SALES AREA	ENGLAND/(Hong Kong)	France/Swiss	German/Italy/Spain others
	POWER REQUIRMENT	AC 230/240V ±10 % 50/60 Hz	AC 230/240V ±10 % 50/60 Hz	AC 230/240V ±10 % 50/60 Hz
	OWNER'S MANUAL LANGUAGE	English & Quick English	French/English	Ger/ENG/FRA/Spa
	OSD LANGUAGE(*initial) *1	ENGLISH	Fre/Eng	Ger/ENG/FRA/Spa
	Auto Set UP	Plug and Auto set up >> No (Included in Initial setting)	Plug and Auto set up >> No (Included in Initial setting)	Plug and Auto set up >> No (Included in Initial setting)
	HDD	160GB:TBD	160GB:TBD	160GB:TBD
	Audio DAC	Yes	Yes	Yes
	Video	DAC VCD & SVCD	VCD &SVCD	VCD &SVCD
	PROGRESSIVE OUT	Yes	Yes	Yes
	EASY NAVI	Yes	Yes	Yes
Tuner/Timer	BROADCAST SYSTEM	PAL-I	PAL-B/G, SECAM-L,D/K	PAL-B/G,D/K,SECAM-B/G,D/K
	Timer	24hrs clock	24hrs clock	24hrs clock
	STEREO(& BILINGUAL) SYSTEM	Yes (NICAM-I)	NICAM-L,B/G & IGR-B/G	NICAM,IGR-B/G,D/K
	GEMSTAR FUNCTION	No	No	No
	Number of event	32 program/2 months(TBD)	32 program/2 months	32 program/2months (TBD)
	VPS/PDC	PDC	PDC/VPS	PDC/VPS
	SAT.BOX CONTROL	No	No	No
	SAT.MONITOR	No	No	No
	TV/DVR	Yes	Yes	Yes
	NexT ViewLink	No	No	No
Terminal	***Front**			
	S-video In	No	No	No
	Video In US-Pin	Yes	Yes	Yes
	Audio In US-Pin	Yes	Yes	Yes
	DV Input	No	No	No
	*Rear			
	S-Video In	No	No	No
	S-Video Out	Yes	Yes	Yes
	Video In US-Pin	No	No	No
	Video Out US-Pin	Yes	Yes	Yes
	Audio In US-Pin	No	No	No
	Audio Out US-Pin	Yes	Yes	Yes
	Digital Audio Out(coaxial/Optical)	Coaxial	Coaxial	Coaxial
	Component Video Out	Yes	Yes	Yes
	RF Input/Output	Yes(w/o RF converter out)	Yes(w/o RF converter out)	Yes(w/o RF converter out)
	HDMI	NO	NO	NO
	VIDEO/AUDIO 21 PIN	Yes	Yes	Yes
	CANAL+ or SAT 21 PIN	Yes(Sat)	Yes(CANAL)	Yes(CANAL)

	MODEL NAME	RD-XS24SB	RD-XS24SF	RD-XS24SG
Recording	DVD-RAM(4.7GB/9.4Gb)	VR format	VR format	VR format
	DVD-RW(4.7GB)	DVD-Video/VR format	DVD-Video/VR format	DVD-Video/VR format
	DVD-R(4.7GB)	DVD-Video/VR format	DVD-Video/VR format	DVD-Video/VR format
	DVD-R(3.9GB)	No	No	No
	DVD-R(8cm)	No	No	No
	HDD	Yes	Yes	Yes
	NTSC (Line recording)	No	No	No
	PAL	Yes	Yes	Yes
	SECAM	Yes	Yes	Yes
	Video Encoding	MPEG2	MPEG2	MPEG2
	Audio Encoding	AC3/LPCM	AC3/LPCM	AC3/LPCM
	RGB Recording	No	No	No
	VIDEO REC mode	SP/LP/Manual(1.0-9.2Mbps)	SP/LP/Manual(1.0-9.2Mbps)	SP/LP/Manual(1.0-9.2Mbps)
	AUDIO REC mode	DD1(192kbps,2ch)/DD2(384kbps,2ch) LPCM(48kHz/16bit 2ch)	DD1(192kbps,2ch)/DD2(384kbps,2ch) LPCM(48kHz/16bit 2ch)	DD1(192kbps,2ch)/DD2(384kbps,2ch) LPCM(48kHz/16bit 2ch)
	3D DNR	Yes	Yes	Yes
	3D Y/C	Yes	Yes	Yes
Playback	DVD-RAM(4.7GB/9.4Gb)	VR format	VR format	VR format
	DVD-RW(4.7GB)	DVD-VIDEO/VR format	DVD-VIDEO/VR format	DVD-VIDEO/VR format
	DVD-R(4.7GB)	DVD-Video/VR format	DVD-Video/VR format	DVD-Video/VR format
	DVD-R(3.9GB)	No	No	No
	DVD-R(8cm)	No	No	No
	DVD-ROM	Yes	Yes	Yes
	HDD	Yes	Yes	Yes
	Audio CD	Yes	Yes	Yes
	Video CD	Yes	Yes	Yes
	SVCD	Yes	Yes	Yes
	MP3	Yes	Yes	Yes
	WMA	No	No	No
	JPEG	Yes	Yes	Yes
	NTSC	Yes	Yes	Yes
	PAL	Yes	Yes	Yes
	Dolby Digital(AC3)	Yes	Yes	Yes
	MPEG1	Yes	Yes	Yes
	MPEG2(decode)	Yes	Yes	Yes
	MPEG2(digital out)	Yes	Yes	Yes
	MPEG 5.1ch	No	No	No
	PCM	Yes	Yes	Yes
	0DTS(decode)	No	No	No
	DTS(digital out)	Yes	Yes	Yes
	3D	Q-sound	Q-sound	Q-sound

	MODEL NAME	RD-XS24SB	RD-XS24SF	RD-XS24SG
Trick Play	FF	1.5 with Audio, 8, 30, 100 times	1.5 with Audio, 8, 30, 100 times	1.5 with Audio, 8, 30, 100 times
	REV	1.5, 8, 30, 100 times	1.5, 8, 30, 100 times	1.5, 8, 30, 100 times
	REV-Play	No	No	No
	SLOW	1/2, 1/8, 1/16	1/2, 1/8, 1/16	1/2, 1/8, 1/16
	REV-Slow	1/2, 1/8, 1/16	1/2, 1/8, 1/16	1/2, 1/8, 1/16
	Skip Search	Yes	Yes	Yes
	Instant Replay	Yes	Yes	Yes
	Instant Skip	Yes	Yes	Yes
	Time Slip	Yes	Yes	Yes
	1/20 Skip	Yes	Yes	Yes
	RANDAM	Title Randum/Chater Randum/Track Randum	Title Randum/Chater Randum/Track Randum	Title Randum/Chater Randum/Track Randum
	REPEAT	A-B, Chapter, Title, All Title & Playlist All Title, Track, Disc	A-B, Chapter, Title, All Title & Playlist All Title, Track, Disc	A-B, Chapter, Title, All Title & Playlist All Title, Track, Disc
	Signal Input	PAL	PAL	PAL
	Signal Output	Auto/PAL	Auto/PAL	Auto/PAL
	Video & Audio Cable	No	No	No
	RF Cable	Yes	Yes	Yes
	Scart Cable	No	No	No
	AC Cable	Yes	Yes	Yes

*1: Ita/Spa : only OSD, Alerts are displayed in Initial Language

MEMO

3. Software Update

1) Introduction

Toshiba will often support software update to improve the performance of DVD Recorder to the latest status.

2) How to make Main-Board(Back-end)

① Power on.
② Disc tray open.
③ Insert update CD.
④ Tray close. Set loads update-data in CD.
   When update is starting normally, LED-display displays "V-UP".
⑤ Wait until update is finished. After update is finished, LED-display displays "MP" for a moment.
   And opening tray, set turns stand-by mode automatically.

Caution

It is very important : please read the below notice before updating your unit.
The following events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① The power cord unplugged.
② Power Outage.
③ Dirt or Scratches on the disc.
④ Opening a disc tray during processing.

MEMO

4. Disassembly and Reassembly

4-1 Cabinet and PCB

Note : Reassembly in reverse order.

4-1-1 Top Cabinet Removal

1) Remove 5 Screws ❶.
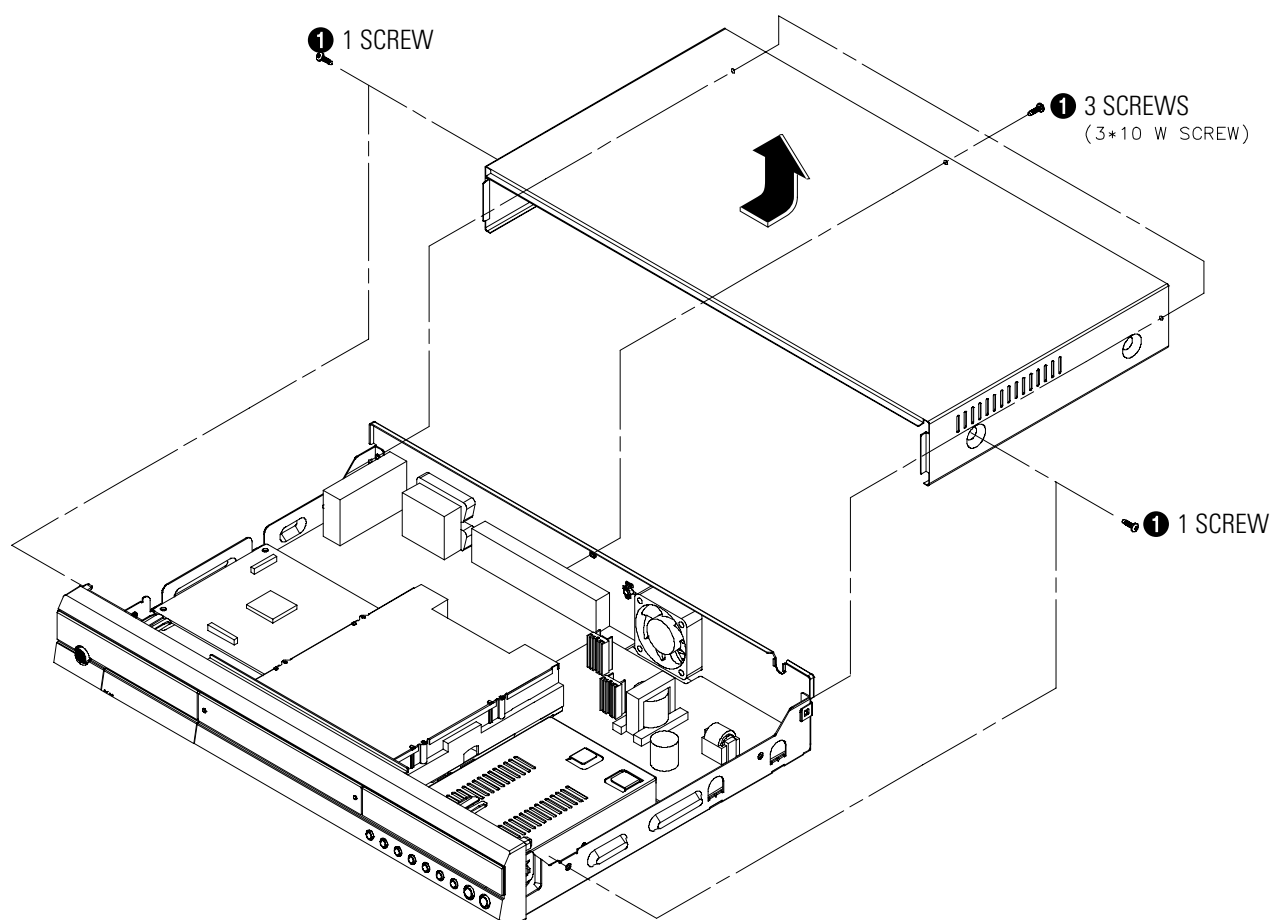2) Lift up the Top Cabinet in direction of arrow.

❶ 1 SCREW

❶ 3 SCREWS
(3*10 W SCREW)

❶ 1 SCREW

Fig. 4-1 Top Cabinet Removal

4-1-2 Ass'y Front-Cabinet Removal

1) Release 5 Hooks ❶, ❷, ❸, and Ass'y Front-Cabinet ❹.
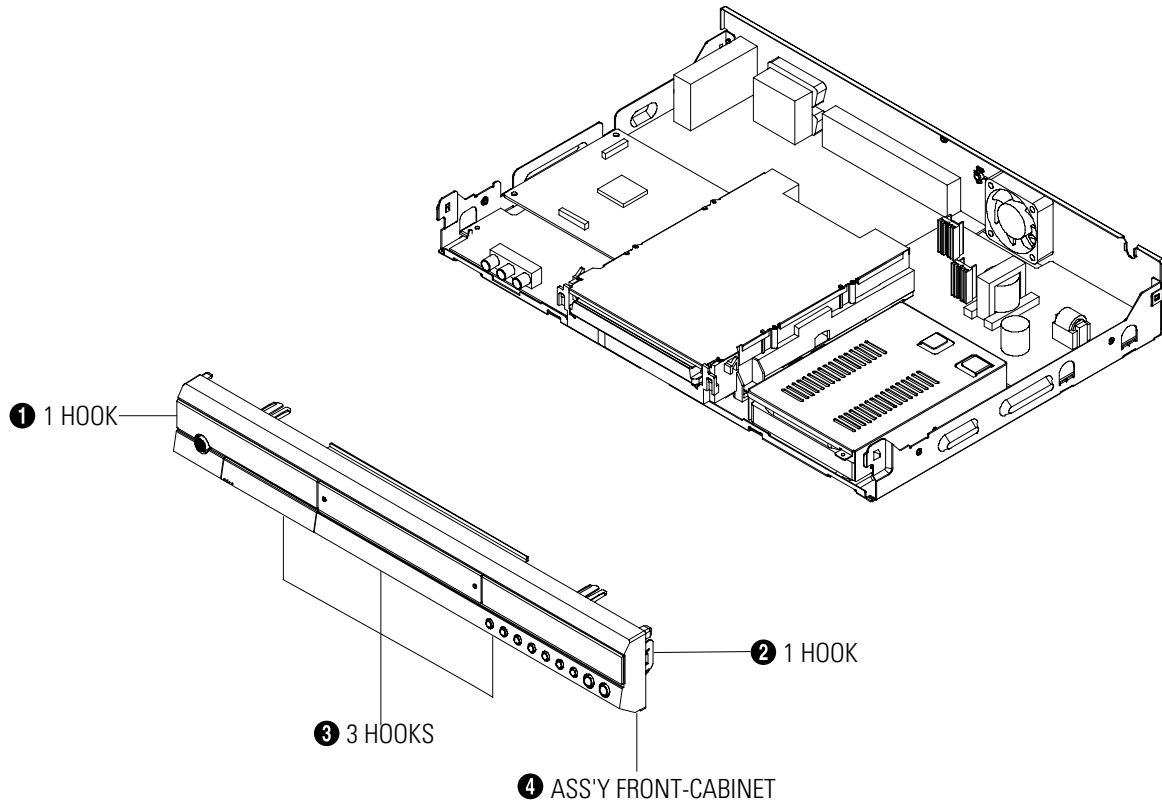

Fig. 4-2 Ass'y Front-Cabinet Removal

4-1-3 Ass'y LOADER, HDD Removal

1) Remove 3 Screws ❶, from the Ass'y LOADER ❷ and lift it up.
2) Remove 4 Screws ❸, from the HDD ❹ and lift it up.

❶ 3 SCREWS
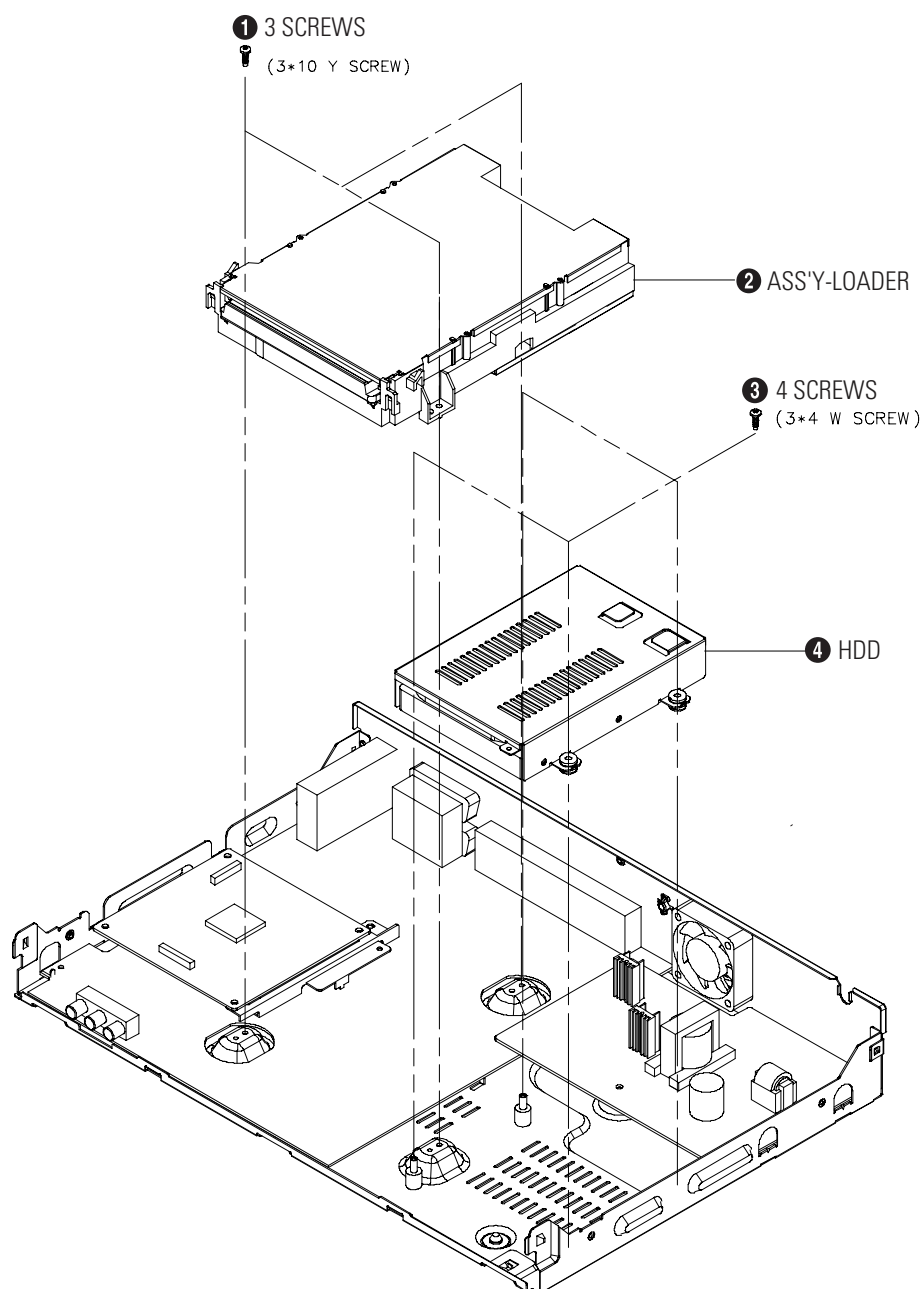(3*10 Y SCREW)

❷ ASS'Y-LOADER

❸ 4 SCREWS
(3*4 W SCREW)

❹ HDD

Fig. 4-3 Ass'y LOADER, HDD Removal

4-1-4 Main PCB and S.M.P.S. PCB Removal

1) Remove 4 Screws ❶, from the Main PCB ❷ and lift it up.
2) Remove 4 Screws ❸,from the S.M.P.S. PCB ❹ and lift it up.

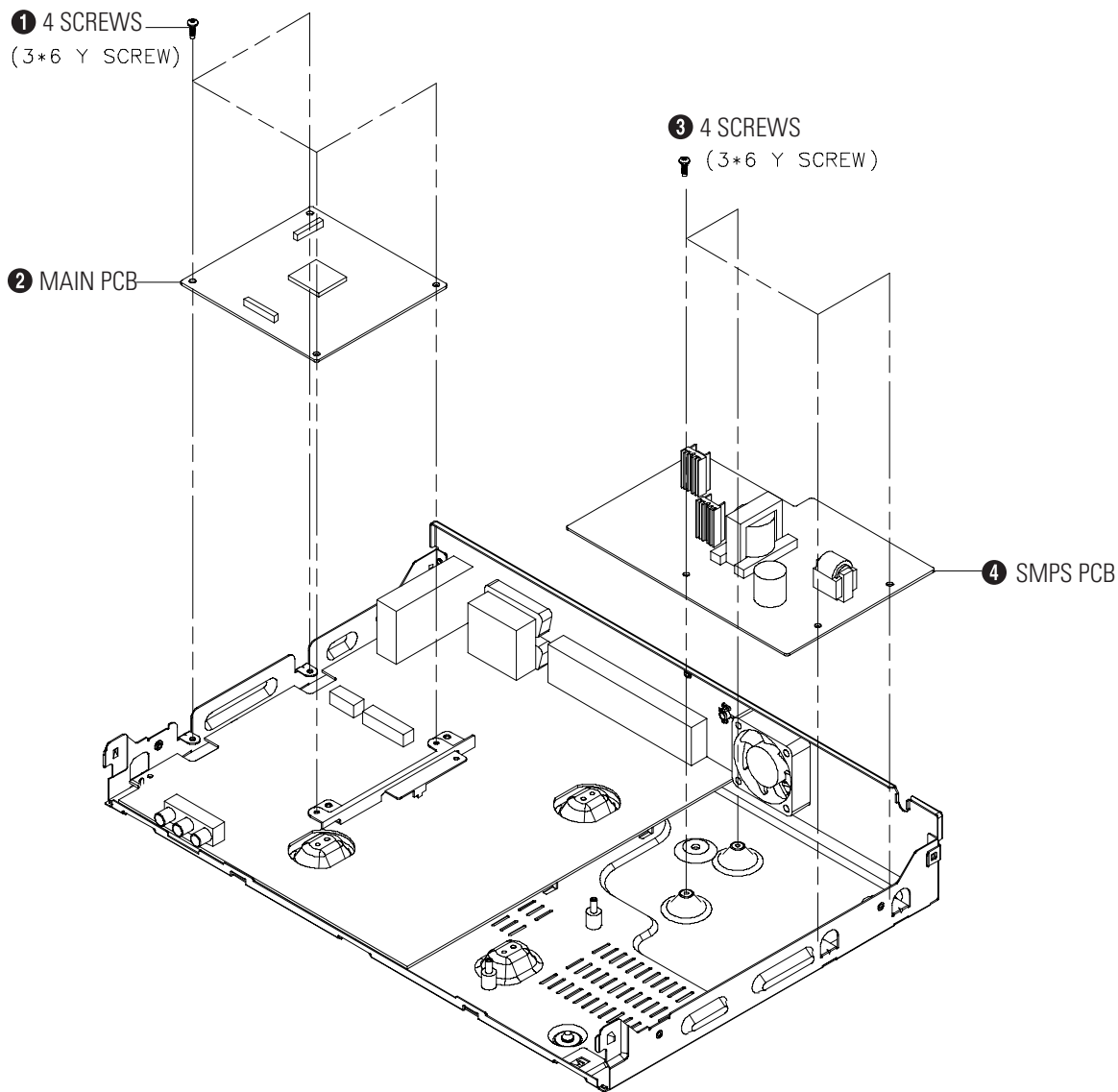❶ 4 SCREWS
(3*6 Y SCREW)

❸ 4 SCREWS
(3*6 Y SCREW)

❷ MAIN PCB

❹ SMPS PCB

Fig. 4-4 Main PCB and S.M.P.S. PCB Removal

4-1-5 Jack PCB Removal

1) Remove 6 Screws ❶, ❷, ❸, ❹ from the Jack PCB ❺ and lift it up.

❷ 2 SCREWS
(3*6 Y SCREW)

❶ 2 SCREWS
(3*6 Y SCREW)

❺ JACK PCB
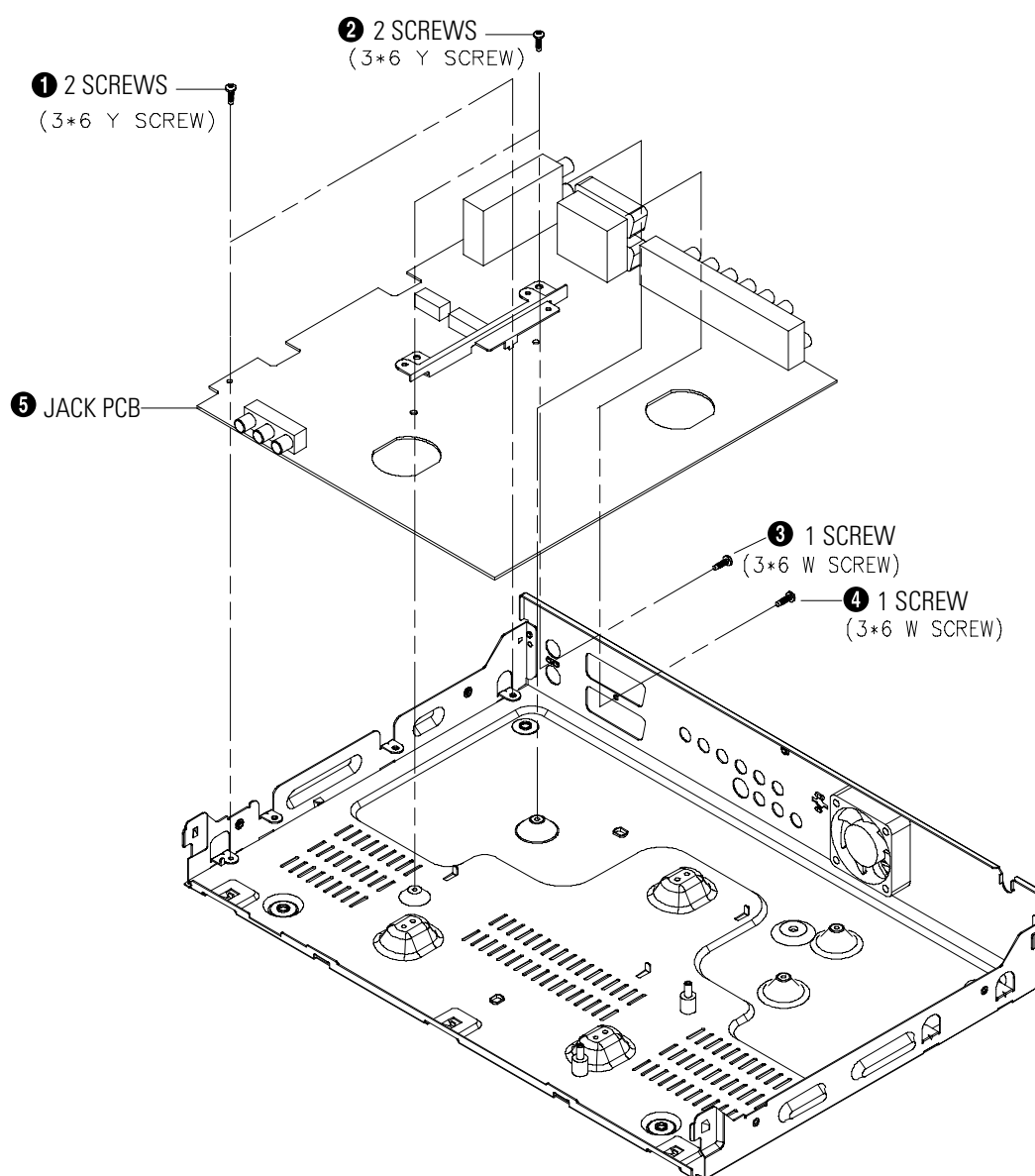
❸ 1 SCREW
(3*6 W SCREW)

❹ 1 SCREW
(3*6 W SCREW)

Fig. 4-5 Jack PCB Removal

4-1-6 DC FAN Removal

1) Remove 2 Screws ❶, from the DC Fan ❷ and lift it up.
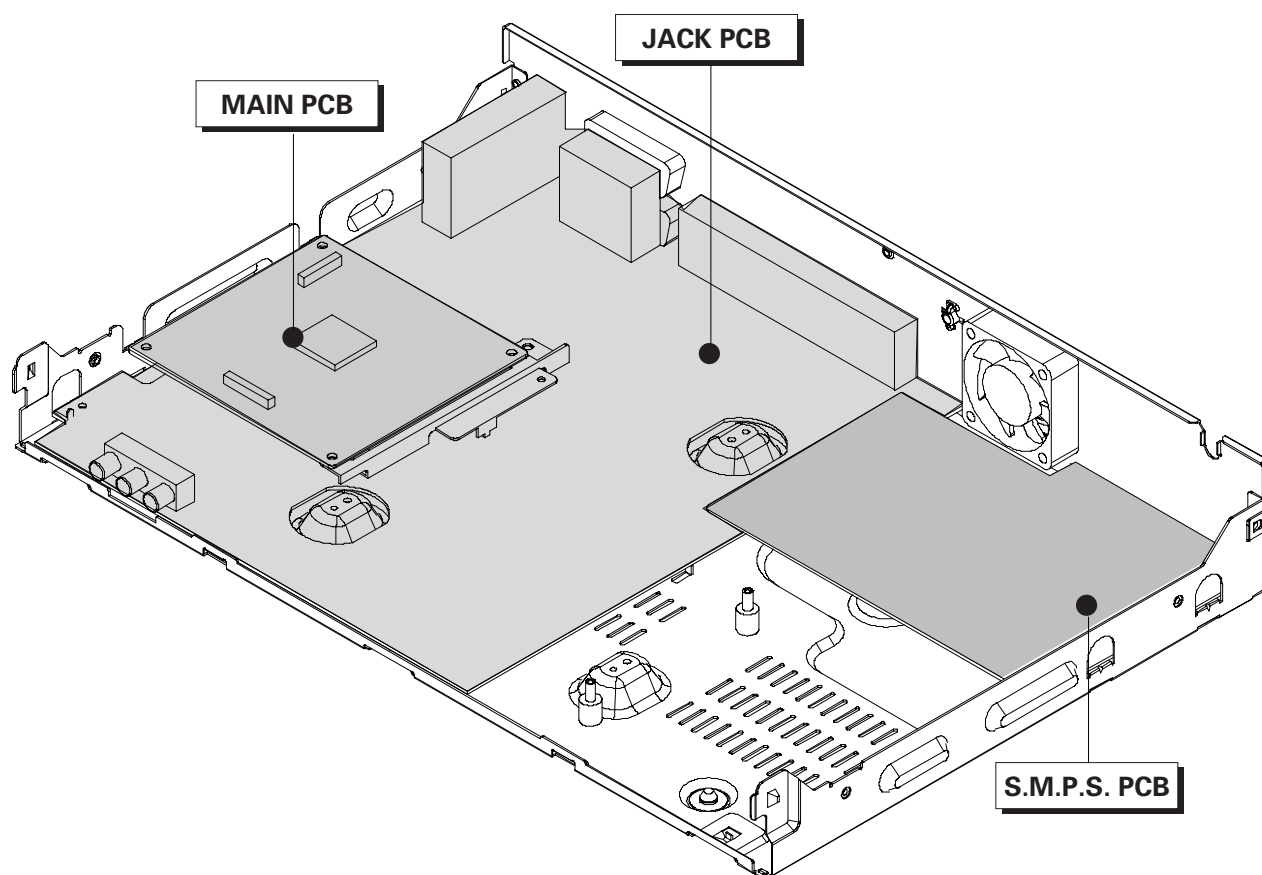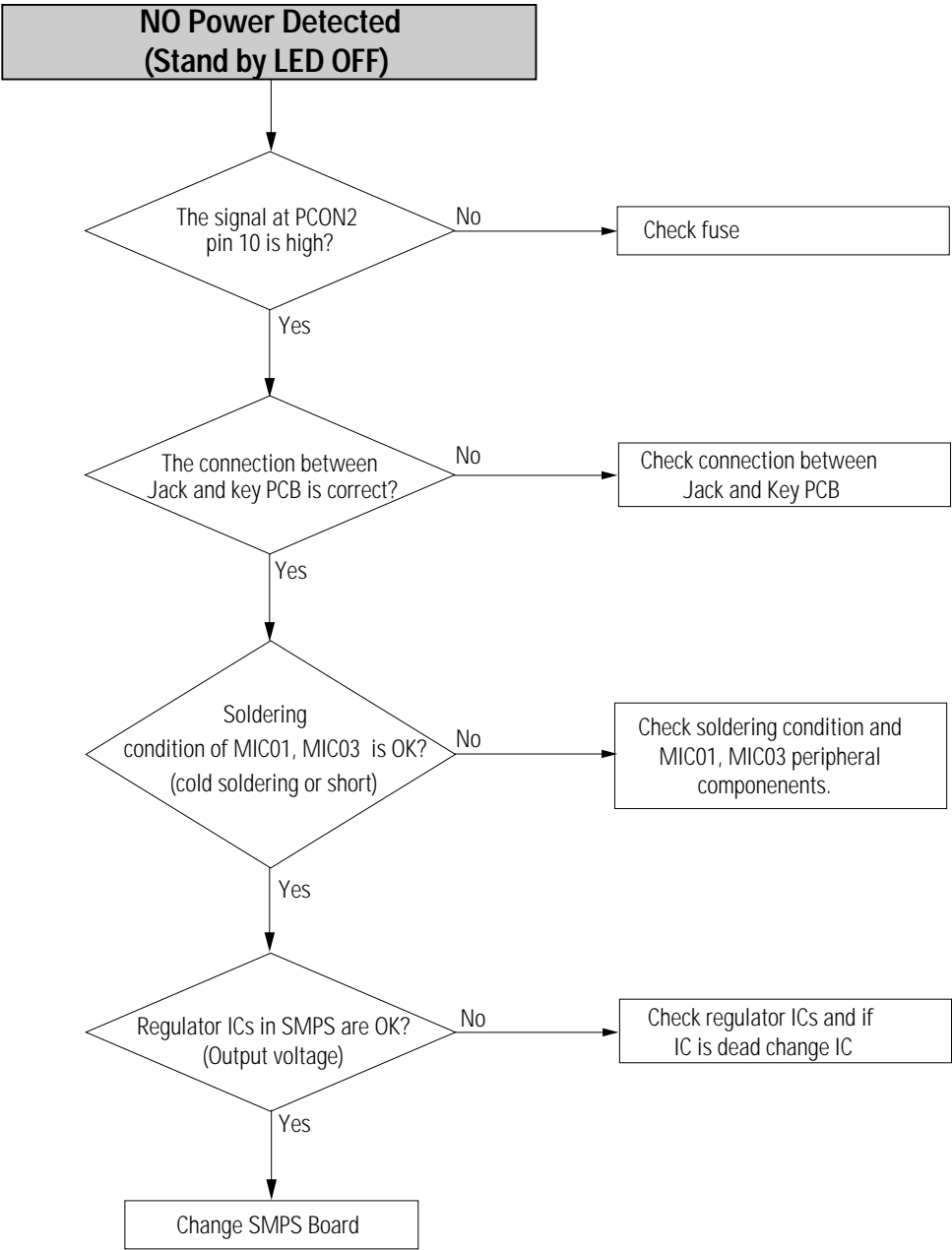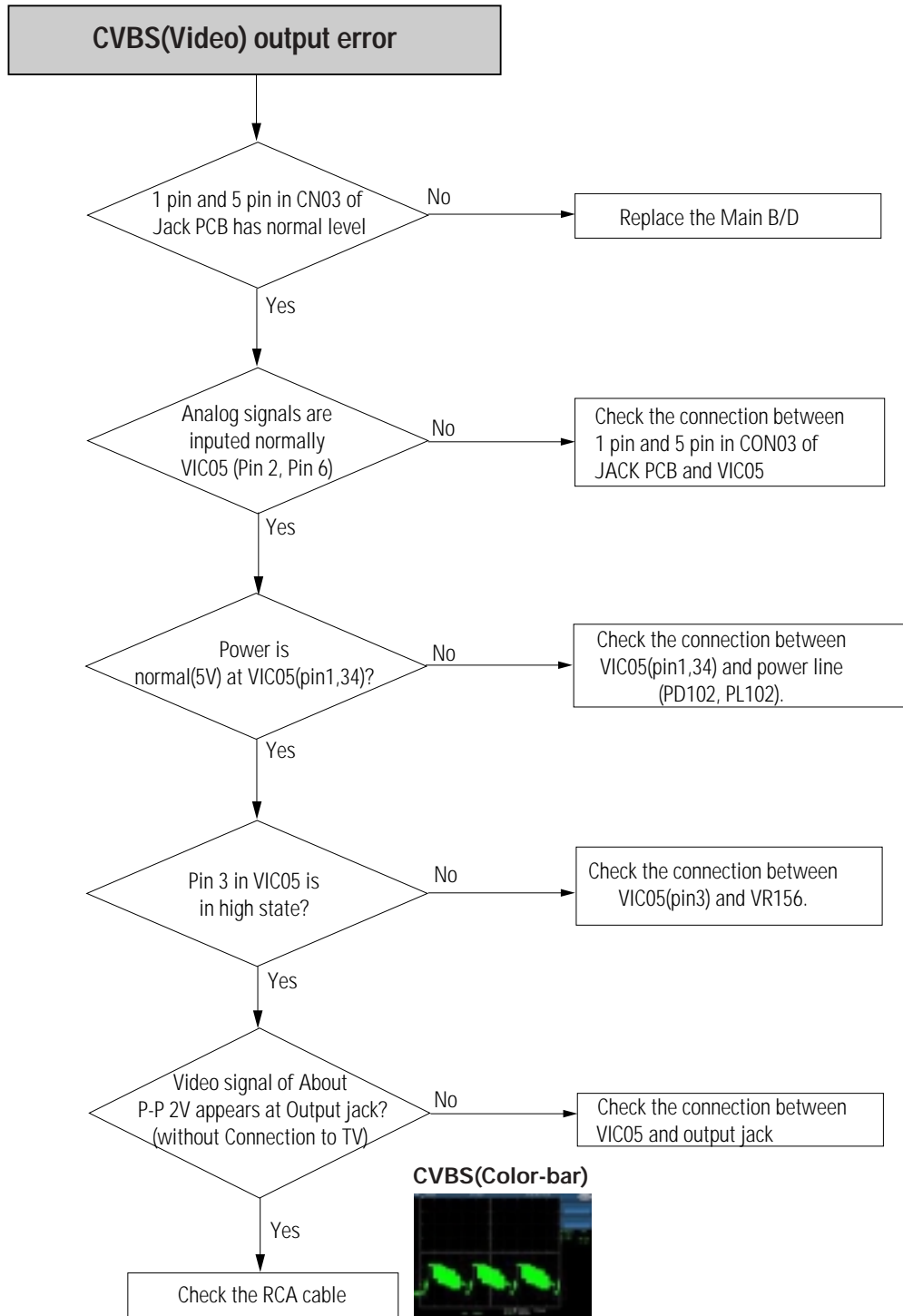

Fig. 4-6 DC FAN Removal

4-2 PCB Location

MAIN PCB

JACK PCB

S.M.P.S. PCB

Fig. 4-7 PCB Location

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5. Troubleshooting

```
┌─────────────────────────────────┐
│      NO Power Detected          │
│     (Stand by LED OFF)          │
└─────────────────────────────────┘
                │
                ▼
         ╱─────────────╲
        ╱ The signal at  ╲      No      ┌──────────────────┐
        ╲ PCON2 pin 10    ╱ ──────────▶ │   Check fuse     │
         ╲ is high?      ╱              └──────────────────┘
              │ Yes
              ▼
         ╱─────────────╲
        ╱ The connection ╲     No       ┌──────────────────────┐
        ╲ between Jack and╱ ──────────▶ │ Check connection     │
         ╲ key PCB is     ╱             │ between Jack and Key  │
          ╲ correct?     ╱              │ PCB                   │
              │ Yes                     └──────────────────────┘
              ▼
         ╱─────────────╲
        ╱  Soldering     ╲    No        ┌──────────────────────┐
        ╲ condition of    ╱ ──────────▶ │ Check soldering       │
         ╲ MIC01, MIC03   ╱             │ condition and MIC01,  │
          ╲ is OK? (cold  ╱             │ MIC03 peripheral      │
           ╲ soldering    ╱             │ componenents.         │
            ╲ or short)  ╱              └──────────────────────┘
              │ Yes
              ▼
         ╱─────────────╲
        ╱ Regulator ICs  ╲    No        ┌──────────────────────┐
        ╲ in SMPS are OK? ╱ ──────────▶ │ Check regulator ICs   │
         ╲ (Output        ╱             │ and if IC is dead     │
          ╲ voltage)     ╱              │ change IC             │
              │ Yes                     └──────────────────────┘
              ▼
┌──────────────────────┐
│  Change SMPS Board   │
└──────────────────────┘
```

CVBS(Video) output error

1 pin and 5 pin in CN03 of Jack PCB has normal level

No → Replace the Main B/D

Yes

Analog signals are inputed normally VIC05 (Pin 2, Pin 6)

No → Check the connection between 1 pin and 5 pin in CON03 of JACK PCB and VIC05

Yes

Power is normal(5V) at VIC05(pin1,34)?

No → Check the connection between VIC05(pin1,34) and power line (PD102, PL102).

Yes

Pin 3 in VIC05 is in high state?

No → Check the connection between VIC05(pin3) and VR156.

Yes

Video signal of About P-P 2V appears at Output jack? (without Connection to TV)

No → Check the connection between VIC05 and output jack

Yes

Check the RCA cable

CVBS(Color-bar)

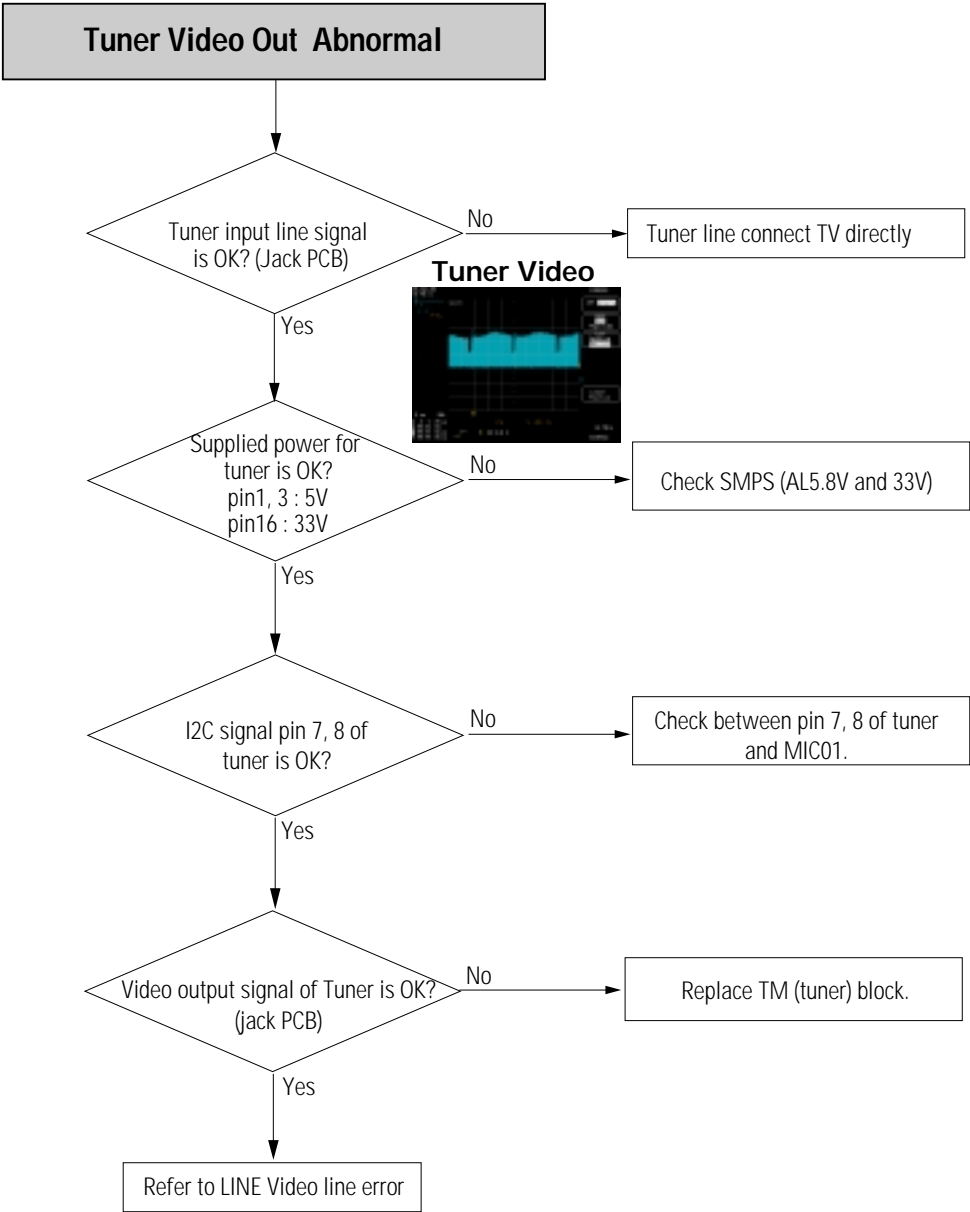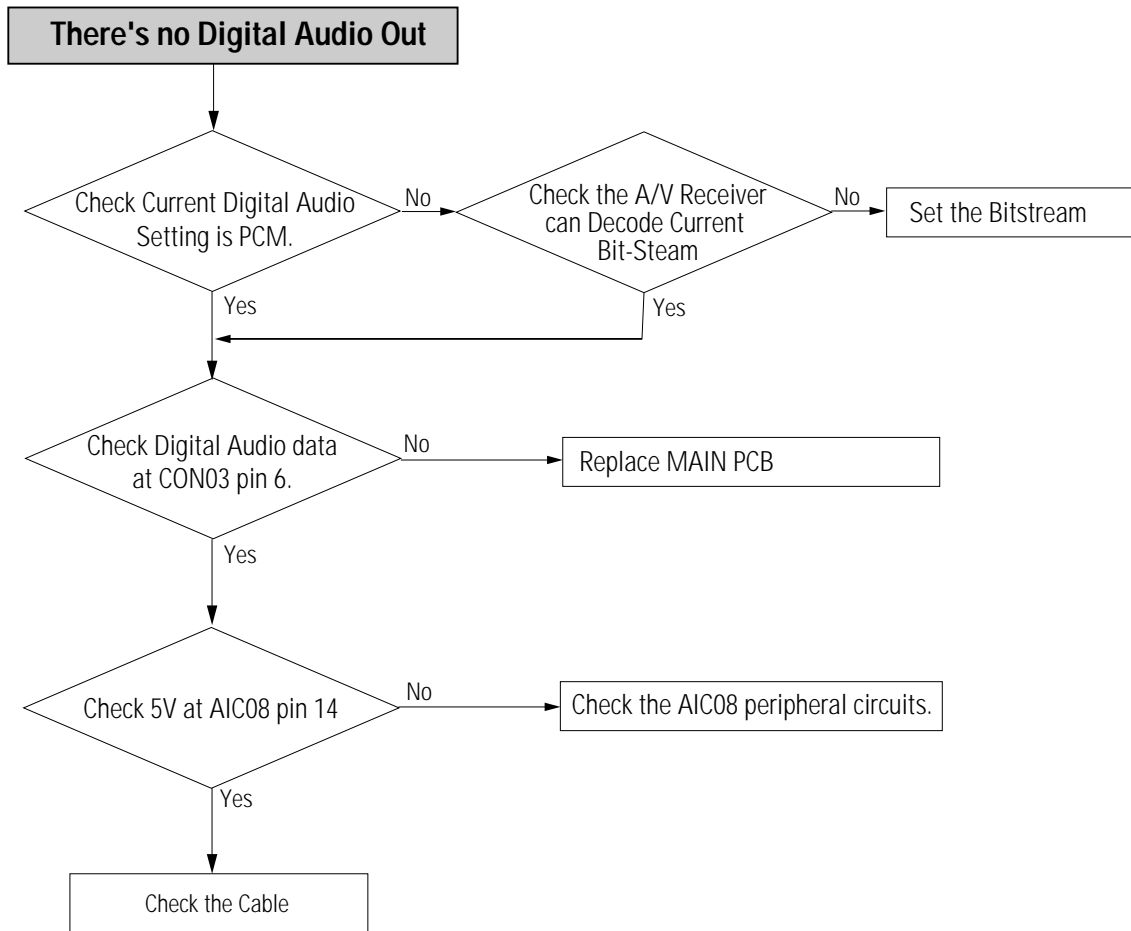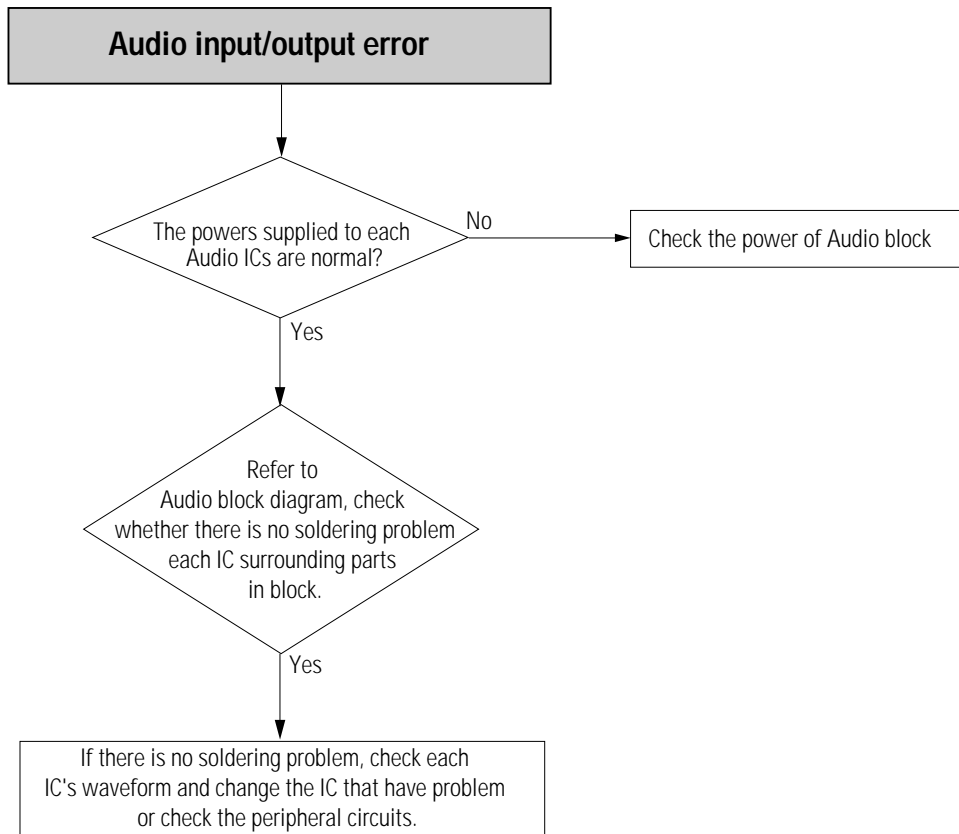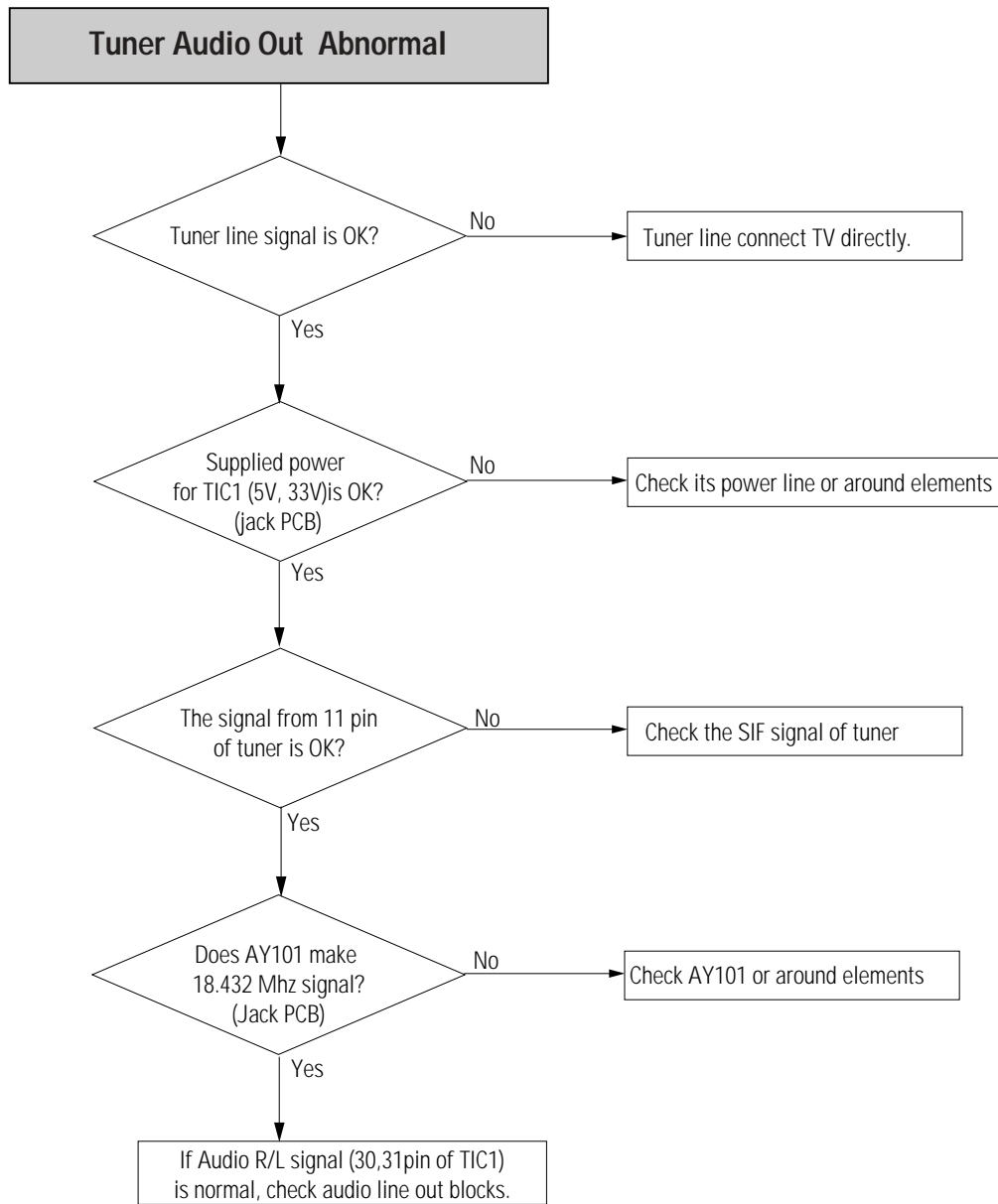# IF Recorder is under PSO(progressive scan output) MODE, it does not output the CVBS& S-Video, RGB signal.

Component (Y, Cb, Cr) output error

2/6/10 Pin in C0N3 of
Jack PCB has normal level? — No → Replace the Main B/D

Yes

Analong signals are
inputted normally
VIC05(Pin 12/14/16) — No → Check the connection between
2/6/10 pin in C0N3 of JACK PCB
and VIC05

Yes

Power is normal (5V) at
VIC05 (Pin 1, 34)? — No → Check the connection between
VIC05 (Pin 1, 34) and Power line
(7,8 pin of CON05)

Yes

Pin 15 in VIC05 is
in high state? — No → Check the connection between
VIC05 and MIC01 56 pin.

Yes

Video signal of
About P-P 2V appears at Output Jack?
(without connection to TV) — No → Check the connection between
VIC05 and output jack

Y(Color-bar)   **Pb(Color-bar)**   **Pr(Color-bar)**

Yes

Check the RCA cable

IF Recorder is under PSO(progressive scan output) MODE, or it does not
output the CVBS& S-Video signal.

S-Video output error

↓

1 pin and 5 pin in CON03 of jack PCB has normal level? — No → Replace the Main B/D

Yes ↓

Analog signals are inputted normally VIC05(pin 2,6) — No → Check the connection between 1 pin and 5 pin in CON03 of JACK PCB and VIC05

Yes ↓

Power is normal (5V) at VIC05(pin 1,34)? — No → Check the connection between VIC05 (pin 1,34) and power line (7, 8 pin of CON03).

Yes ↓

Pin 3 in VIC05 is In high state? — No → Check the connection between VIC05 (pin 3) and VR156. Check VIC1 peripheral circuit.

Yes ↓

Video signals of about P-P 2V appears at output jack? (without connection to TV) — No → Check the connection between VIC05 and output jack

Yes ↓

Check the S-Video cable

Y(Color-bar)   **C(Color-bar)**

AV1 (RGB) Output Error

2, 6 and 10 pin in CON03 of jack PCB → **No** → Check Main PCB

Yes

Analog signals are inputted normally VIC05(pin 10, 14, 15) → **No** → Check the connection between 2,6 and 10 pin in CON03 of Jack PCB and VIC05

Yes

Power is normal at VIC05 1,34? → **No** → Check the connection between 1, 34 of VIC05 and power

Yes

RGB control signal level is 4V at 16 pin of SCART 1 (AV1JACK)? → **No** → Check the connection between 13pin of SIC01 and AV1 jack

Yes

RGB Video signal appears at 7, 11, 15 pin of AV1 output jack? → **No** → Check the connection between VIC05 and output jack

Yes

Check the RCA cable

IF Recorder is under Component mode (in OSD setup menu), it does not output RGB out put.

AV1, AV2 (CVBS) output error

1 pin and 5 pin in CON03 of jack PCB has normal level? — No → Check Main PCB

Yes ↓

Analog signal are Inputted normally 5pin of SIC05 — No → Check the connection between 1 pin and 5 pin of CON03 in Jack PCB and SIC01

Yes ↓

Analog signal are out normally SIC01-29(AV2),30(AV1) — No → Check the power supply to 2, 4, 6pin of SIC01? — No → Check the SMPS (AL5.8V)

Yes ↓

Check the connection between SIC01 and SCART Jack
-AV1 ; 30 pin of SIC02 and 19 pin of AV1
-AV2 : 29 pin of SIC02 and 40 pin of AV2

Yes ↓ (from power supply check)

Check the I2C lin2 (between SIC01-32, 33 and MIC01(Pin 16,18)

LINE CVBS Video Input Error

Pin 15 in VIC01 has normal level? — No → Check the connection between pin15 in VIC01 and LINE pin-jack

Yes

Pin 3 in VIC01(Input MUX) has normal level? — No → Check the connection between VIC01-9, 10, 11 and MIC01(pin 29,30,32) Control signal of pic9, 10, 11 in IC201 is as below.
LINE Input : L/H/L
AV2 Input : H/H/H
AV1 Input : L/H/H
PROG Input : L/L/L

Yes

CON02-5 of jack PCB has normal level? — No → Check the connection between CON02-5 of jack PCB and pin 3 in VIC01

Yes

Change Main PCB

Tuner Video Out Abnormal

Tuner input line signal is OK? (Jack PCB) — No → Tuner line connect TV directly

Yes

Tuner Video

Supplied power for tuner is OK?
pin1, 3 : 5V
pin16 : 33V — No → Check SMPS (AL5.8V and 33V)

Yes

I2C signal pin 7, 8 of tuner is OK? — No → Check between pin 7, 8 of tuner and MIC01.

Yes

Video output signal of Tuner is OK? (jack PCB) — No → Replace TM (tuner) block.

Yes

Refer to LINE Video line error

There's no Digital Audio Out

Check Current Digital Audio Setting is PCM.

No → Check the A/V Receiver can Decode Current Bit-Steam

No → Set the Bitstream

Yes

Yes

Check Digital Audio data at CON03 pin 6.

No → Replace MAIN PCB

Yes

Check 5V at AIC08 pin 14

No → Check the AIC08 peripheral circuits.

Yes

Check the Cable

```
┌─────────────────────────────────┐
│      Audio input/output error   │
└─────────────────────────────────┘
                 │
                 ▼
         ╱───────────────╲                No    ┌──────────────────────────────┐
        ╱ The powers supplied to each ╲────────▶│ Check the power of Audio block│
        ╲ Audio ICs are normal?       ╱         └──────────────────────────────┘
         ╲───────────────╱
                 │ Yes
                 ▼
         ╱───────────────╲
        ╱ Refer to          ╲
       ╱ Audio block diagram, check ╲
       ╲ whether there is no soldering problem ╱
        ╲ each IC surrounding parts ╱
         ╲ in block.    ╱
                 │ Yes
                 ▼
┌──────────────────────────────────────────┐
│ If there is no soldering problem, check each│
│ IC's waveform and change the IC that have problem│
│ or check the peripheral circuits.         │
└──────────────────────────────────────────┘
```

Tuner Audio Out Abnormal

Tuner line signal is OK? —No→ Tuner line connect TV directly.

Yes

Supplied power for TIC1 (5V, 33V)is OK? (jack PCB) —No→ Check its power line or around elements

Yes

The signal from 11 pin of tuner is OK? —No→ Check the SIF signal of tuner

Yes

Does AY101 make 18.432 Mhz signal? (Jack PCB) —No→ Check AY101 or around elements

Yes

If Audio R/L signal (30,31pin of TIC1) is normal, check audio line out blocks.

```
┌─────────────────────────────────────┐
│          Disc loading error          │
└─────────────────────────────────────┘
                    │
                    ▼
              ╱───────────╲
            ╱  Is loader's  ╲        No
           ╱   power ok?     ╲──────────────►  ┌──────────────────────────┐
           ╲   (5V, 12V)     ╱                 │ Check the power in SMPS.  │
            ╲───────────────╱                  └──────────────────────────┘
                  │ Yes
                  ▼
             ╱─────────────╲
           ╱   Is the 40 pin ╲       No
          ╱  FFC cable(between ╲──────────────► ┌──────────────────────────┐
          ╲  main & deck)      ╱                │ Reinsert FFC cable        │
          ╲  inserted correctly?╱               │ correctly                 │
            ╲─────────────────╱                 └──────────────────────────┘
                  │ Yes
                  ▼
           ╱───────────────────╲
         ╱ Is communication between ╲  No
        ╱  Main board and Loader     ╲────────► ┌──────────────────────────┐
        ╲  normal?                    ╱         │ Change the Main board     │
          ╲─────────────────────────╱          └──────────────────────────┘
                  │ Yes
                  ▼
         ┌──────────────────────┐
         │  Change the loader    │
         └──────────────────────┘
```

Remocon no work

KIC03(pin1) signal is OK?

No → Check the power(pin2) line of KIC03 is 5V.

Yes

MIC01(61 pin) signal is OK? (Jack PCB)

No → Check peripheral components between MIC01(pin 61) and KIC03(pin 1)

Yes

Change KIC03

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6. Exploded View and Parts List

6-1 Cabinet Assembly

● **S.N.A.: Service Not Available**

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
A001	AK59-00047A	BY731796	REMOCON-ASSY;RD-XS24STB/TSB,TSB,187.5*54	
C001	AK97-01369A	BY731793	ASSY FRONT CABINET;ASSY,RD-XS24,05-TSB D	RD-XS24SB
	AK97-01369B	BY731794	ASSY FRONT CABINET;ASSY,RD-XS24-TF-TG,05	RD-XS24SF,SG
C002	AK64-01407A	BY731779	DOOR-TRAY;D-R150,ABS HB,T2,W24,W157,2,BL	
C011	AK61-00137A	BY734044	SPRING ETC-DOOR;DVD-R4000,COIL,,,,,,,PI0.	
C015	AK64-01405A	BY731773	CABINET-TOP;D-R150/TSB,PCM,T0.6,W430,L28	
C022	AK64-01408A	BY731780	DOOR-FRONT;D-R150,ABS HB,T2,H28,WW89,2,G	
C527	MF59-00271B	BY635041	HDD;160GB,9W6024-266,63,16,16,383,	
LOADER	AK97-01400A	BY635038	ASSY-LOADER;-,D-R150/RD-XS24,LOADER-DRIV	
P001	AK92-00792A	BY630593	ASSY PCB-MAIN;RD-XS24-TB,HDD RECORDER	RD-XS24SB
	AK92-00790A	BY630595	ASSY PCB-MAIN;RD-XS24-TF,HDD RECORDER	RD-XS24SF
	AK92-00791A	BY630596	ASSY PCB-MAIN;RD-XS24-TG,HDD RECORDER	RD-XS24SG
P003	AK92-00766B	BY630591	ASSY PCB-SMPS;RD-XS24,HDD-RECORDER	
P007	AK92-00765A	BY630542	ASSY PCB-KEY;D-R150,SINGLE RECORDER	
P022	AK92-00787A	BY630592	ASSY PCB-JACK;RD-XS24-TB,HDD RECORDER	RD-XS24SB
	AK92-00789A	BY630594	ASSY PCB-JACK;RD-XS24-TF,HDD RECORDER	RD-XS24SF
	AK92-00788A	BY630597	ASSY PCB-JACK;RD-XS24-TG,HDD RECORDER	RD-XS24SG
⚠ P025	3903-000175	BY634814	CBF-POWER CORD;AT,GB,GP2,HOUSING(2P),250	RD-XS24SB
⚠	3903-000176	BY634777	CBF-POWER CORD;AT,EU,CP2,HOUSING(2P),250	RD-XS24SF,SG
P030	3103-001158	BY634994	FAN-DC;12V,20mA,2000rpm,0.125m^3/mi,7	
W002	6002-000398	BY731731	SCREW-TAPPING;BH,+,2,M3,L6,ZPC(YEL),SWCH	
W009	6003-000276	22797133	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWC	
W268	6003-000254	BY734068	SCREW-TAPTITE;BH,+,S,M3,L6,ZPC(WHT),SM20	
W270	6001-000742	BY734219	SCREW-MACHINE;PH,+,UNC6-32,L4.2,ZPC(WHT)	
W271	6009-001411	BY731644	SCREW-SPECIAL;TH,+,-,M5,L14,NI PLT,SWRCH	
W272	6003-001464	BY731645	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WHT)	
W275	6003-001561	BY731750	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(YEL),SW	
⚠ I/B	AK68-00894A	BY635039	MANUAL USERS;RD-XS24SB,TSB,ENG,Operation	RD-XS24SB
⚠ I/B	AK68-00894B	BY635040	MANUAL USERS;RD-XS24SB,TSB,ENGLISH,INS G	RD-XS24SB
⚠ I/B	AK68-00907A	BY635042	MANUAL USERS;RD-XS24SF,TSB,ENG,Operation	RD-XS24SF
⚠ I/B	AK68-00907B	BY635043	MANUAL USERS;RD-XS24SF,TSB,ENG,Ins. Guid	RD-XS24SF
⚠ I/B	AK68-00908A	BY635044	MANUAL USERS;RD-XS24SF,TSB,FRA,Operation	RD-XS24SF
⚠ I/B	AK68-00908B	BY635045	MANUAL USERS;RD-XS24SF,TSB,FRA,Ins Guide	RD-XS24SF
⚠ I/B	AK68-00900A	BY635046	MANUAL USERS;RD-XS24SG,TSB,FRE,Operation	RD-XS24SG
⚠ I/B	AK68-00900B	BY635047	MANUAL USERS;RD-XS24SG,TSB,FRE,Ins. Guid	RD-XS24SG
⚠ I/B	AK68-00909A	BY635048	MANUAL USERS;RD-XS24SF,TSB,ENG,Operation	RD-XS24SG
⚠ I/B	AK68-00909B	BY635049	MANUAL USERS;RD-XS24SG,TSB,ENG,Ins. Guid	RD-XS24SG
⚠ I/B	AK68-00901A	BY635051	MANUAL USERS;RD-XS24SG,TSB,GER,Operation	RD-XS24SG
⚠ I/B	AK68-00901B	BY635052	MANUAL USERS;RD-XS24SG,TSB,GER,Ins. Guid	RD-XS24SG
⚠ I/B	AK68-00902A	BY635053	MANUAL USERS;RD-XS24SG,TSB,SPA,Operation	RD-XS24SG
⚠ I/B	AK68-00902B	BY635054	MANUAL USERS;RD-XS24SG,TSB,SPA,Ins Guide	RD-XS24SG
	AC39-00017A	BY634253	CABLE-ETC-RF(PAL);-,MALE/FEMALE,1200MM,R	RD-XS24SB,SG
	AC39-00018A	BY634851	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R	RD-XS24SF
	AC39-42001R	BY644791	CABLE-A/V;PVC,-,-,3P,-,-,-	

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7. Electrical Parts List

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
P001	**AK92-00792A**	**BY630593**	**ASSY PCB-MAIN;RD-XS24-TB,HDD RECORDER**	**RD-XS24SB**
	AK92-00791A	**BY630596**	**ASSY PCB-MAIN;RD-XS24-TG,HDD RECORDER**	**RD-XS24SG**
	AK92-00790A	**BY630595**	**ASSY PCB-MAIN;RD-XS24-TF,HDD RECORDER**	**RD-XS24SF**
P022	**AK92-00787A**	**BY630592**	**ASSY PCB-JACK;RD-XS24-TB,HDD RECORDER**	**RD-XS24SB**
	AK92-00788A	**BY630597**	**ASSY PCB-JACK;RD-XS24-TG,HDD RECORDER**	**RD-XS24SG**
	AK92-00789A	**BY630594**	**ASSY PCB-JACK;RD-XS24-TF,HDD RECORDER**	**RD-XS24SF**
AB101	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
AB102	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
AC101	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC104	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC105	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC106	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
AC107	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC108	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
AC109	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC110	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
AC111	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	
AC112	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC113	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC114	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC115	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC116	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC117	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC118	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
AC119	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
AC120	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC121	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
AC122	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC123	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC124	2203-000998	BY130446	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	
AC125	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
AC126	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	
AC127	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC128	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC129	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
AC130	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC131	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC132	2203-000315	BY130441	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
AC133	2203-000315	BY130441	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
AC134	2203-000160	BY130524	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G,TP,16	
AC135	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC136	2203-000160	BY130524	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G,TP,16	
AC139	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC140	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC141	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
AC142	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC143	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC144	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC145	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC146	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC147	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC148	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
AC149	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
AC150	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
AC151	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC152	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
AC156	2203-005571	BY130528	C-CER,CHIP;10000nF,+80-20%,6.3V,Y5V,-,20	
AC157	2203-005571	BY130528	C-CER,CHIP;10000nF,+80-20%,6.3V,Y5V,-,20	
AC158	2203-005571	BY130528	C-CER,CHIP;10000nF,+80-20%,6.3V,Y5V,-,20	
AC159	2203-005571	BY130528	C-CER,CHIP;10000nF,+80-20%,6.3V,Y5V,-,20	
AD101	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
AD102	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD103	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD104	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD105	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD106	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
AD107	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
AE101	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
AE102	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
AE103	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE104	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
AE105	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
AE106	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE107	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE108	2401-000303	70795779	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
AE109	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
AE110	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
AE111	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE112	2401-001020	BY130159	C-AL;3.3UF,20%,50V,GP,TP,4X7,5	
AE113	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
AE114A	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
AE115	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE116	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
AE117A	3811-000389	70693052	WIRE-NO SHEATH CU;SPCW,300V,52.4mm,1/0.5	
AE118	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
AE119	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE120	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE121	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
AE122	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
AE123	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE124	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE125	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE126	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE127	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE128	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE129	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE130	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE131	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
AE132	2401-000249	BY130560	C-AL;100uF,20%,10V,GP,TP,6.3x5,5	
AE133	2401-000249	BY130560	C-AL;100uF,20%,10V,GP,TP,6.3x5,5	
AE134	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE135	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE136	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
AE137	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE138	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
AE140	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
AIC01	1204-001765	BY631149	IC-AUDIO PROCESSOR;MSP3417D(PQFP),PQFP,4	
AIC02	0801-001270	BY631325	IC-CMOS LOGIC;4052,MUX/DEMUX,SOP,16,150M	
AIC03	1002-001442	BY631344	IC-A/D CONVERTER;AK5357,24,TSSOP,16P,5x4	
AIC04	1002-001395	BY631337	IC-D/A CONVERTER;PCM1753,24Bit,SSOP,16P,	
AIC05	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC06	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC07	0801-001270	BY631325	IC-CMOS LOGIC;4052,MUX/DEMUX,SOP,16,150M	
AIC08	AH14-10004R	BY631252	IC;M74HCU04,SOP,TAPE 14P	
AIC09	1203-002178	BY631234	IC-POSI.FIXED REG.;1563,SOP,7P,173MIL,PL	
AIC10	1203-003180	BY631307	IC-POSI.FIXED REG.;MM1565,SOP,7P,5x4.4mm	
AL101	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
AL102	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
AL103	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
AL104	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
AL105	2901-001125	BY330094	FILTER-EMI ON BOARD;50V,0.5A,-,220pF,7x2	
AL106	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
AL107	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
AL108	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
AQ101	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ102	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ103	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ104	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ105	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ106	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
AQ107	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ108	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ109	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
AQ110	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ111	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ112	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ113	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ114	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ115	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AR101	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR102	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR105	2007-001134	BY230381	R-CHIP;68ohm,5%,1/10W,TP,1608	
AR106	2007-000309	BY230391	R-CHIP;10ohm,5%,1/10W,TP,1608	
AR107	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
AR108	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR110	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR111	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR113	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR114	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR116	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR118	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR119	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR122	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR123	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR124	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR125	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR126	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
AR128	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR129	2001-000837	70795045	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR132	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR133	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR134	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR135	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR136	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR137	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR138	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR139	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR140	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR141	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR142	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
AR143	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
AR144	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
AR146	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR147	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR148	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR149	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR150	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR151	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR152	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR153	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR154	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR155	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
AR156	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR157	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
AR158	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR159	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR160	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR161	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR162	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR163	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR165	2001-000347	70795605	R-CARBON;13KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR166	2007-000381	BY230323	R-CHIP;13Kohm,5%,1/10W,TP,1608	
AR167	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR168	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR169	2001-000734	70795040	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
AR170	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR171	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR172	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR173	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
AR174	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	
AR175	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR176	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR178	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR179	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR180	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR184	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR185	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR186	2001-000793	70796129	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR187	2001-000793	70796129	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR188	2001-000347	70795605	R-CARBON;13KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR189	2001-000347	70795605	R-CARBON;13KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR190	2001-000347	70795605	R-CARBON;13KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR191	2007-000381	BY230323	R-CHIP;13Kohm,5%,1/10W,TP,1608	
AR192	2001-000347	70795605	R-CARBON;13KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR193	2007-000381	BY230323	R-CHIP;13Kohm,5%,1/10W,TP,1608	
AR194	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR195	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR196	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR197	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR198	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR199	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR200	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR201	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR202	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR203	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR204	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR205	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR206	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR207	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR208	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR209	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR210	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR211	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR212	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR213	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR214	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR215	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR220	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
AR221	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR222	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR223	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AY101	2801-004096	BY631285	CRYSTAL-UNIT;18.432MHZ,20PPM,28-AAA,16PF	
CON04	3708-001802	BY635008	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,STRAIGH	
CON05	3711-001246	BY634998	HEADER-BOARD TO BOARD;NOWALL,12P,1R,2.5m	
CON06	3711-001246	BY634998	HEADER-BOARD TO BOARD;NOWALL,12P,1R,2.5m	
FD101	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
FS101	3404-000165	BY632001	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
JACK1	3722-002111	BY634890	JACK-PIN;6P+1P,SN/NI,RED/WHT/YEL/BLK,AN	
JACK2	3722-002318	BY635006	JACK-PIN;3P(7P),SN/NI,RED/BLU/GRN,ANGLE	
JACK3	3722-002321	BY634999	JACK-SCART;42P,-,SN+PB,BLK,-	
JACK4	3722-001943	BY634864	JACK-PIN;3P,8.3PI,NI,BLK,-	
JACK4A	AK63-00242A	BY734114	GROUND-A V;DVD-R120,PBS,T0.2,W60,L45,YEL	
MC101	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
MC102	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
MC103	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
MC104	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
MC105	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
MC106	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
MC107	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
MC108	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
MC109	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
MC110	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
MC111	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
MC112	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
MC113	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC114	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC115	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC116	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
MC117	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC118	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC119	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC120	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC121	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC122	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
MC123	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ME101	2404-000256	BY130511	C-TA,CHIP;47UF,20%,16V,GP,TP,7343	
ME102	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
ME103	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
ME104	2401-001915	70795114	C-AL;1uF,20%,50V,GP,TP,3x5,5	
ME105	2401-001915	70795114	C-AL;1uF,20%,50V,GP,TP,3x5,5	
ME106	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
MIC01	AK13-00020A	BY631345	IC CONTROLLER QFP-MICOM;uPD78F4225,80,14	
MIC02	AK13-00006A	BY631346	IC ASIC;LC74793JM,DVD-R100,24P,5V,-30t	
MIC03	1203-003836	BY631347	IC-VOL. DETECTOR;PST3222,SOT-25,5P,-,PLA	
MIC04	0801-002454	BY631336	IC-CMOS LOGIC;74HC125,BUS BUFFER,SOP,14P	
MIC05	1204-002139	BY631339	IC-AUDIO PROCESSOR;MM1508,SOT,6P,-,PLAST	
ML101	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
ML102	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
ML103	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
MR101	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR102	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR103	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR104	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR105	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR106	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR107	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR108	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR109	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR110	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR111	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR112	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR113	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR114	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR115	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
MR116	2007-000109	BY130423	R-CHIP;1Mohm,5%,1/10W,TP,1608	
MR117	2007-001196	BY230309	R-CHIP;820Kohm,5%,1/10W,TP,1608	
MR118	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR119	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
MR120	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
MR121	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR122	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
MR123	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR125	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR126	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR127	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
MR128	2001-000666	BY230386	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
MR129	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR130	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
MR131	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR132	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR133	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR134	2001-000666	BY230386	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
MR135	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
MR136	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
MR137	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
MR138	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR139	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR140	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR141	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR142	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR143	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR144	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR145	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
MR146	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
MR147	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR148	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR149	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	

Electrical Parts List

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
MR150	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
MR151	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
MR152	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
MR153	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
MR154	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
MR155	2001-000857	70795358	R-CARBON;560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
MY101	2801-003318	BY633003	CRYSTAL-UNIT;32.768KHz,20ppm,28-AAP,12.5	
MY102	2801-003792	BY633032	CRYSTAL-UNIT;12.5MHZ,30PPM,28-AAM,16,25O	
MY103	2801-001397	BY633009	CRYSTAL-UNIT;4.433619MHz,20ppm,28-AAA,S,	
CON01	3711-005965	BY635011	CONNECTOR-HEADER;BOX,14P,2R,2MM,STRAGHIT	
CON02	3711-005965	BY635011	CONNECTOR-HEADER;BOX,14P,2R,2MM,STRAGHIT	
CON03	3711-005967	BY635012	CONNECTOR-HEADER;BOX,26P,2R,2MM,STRAGHIT	
PC101	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC107	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC108	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PD101	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
PD102	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
PD103	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
PD104	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
PD106	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
PD107	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
PD108	0402-001194	BY430010	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	
PD109	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
PE101	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE103	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
PE104	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
PE105	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
PE106	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
PE107	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE108	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
PE109	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
PE110	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
PIC01	1203-002220	BY631349	IC-POSI.ADJUST REG.;LD1117,DPAK,3P,240MI	
PL101	3811-000389	70693052	WIRE-NO SHEATH CU;SPCW,300V,52.4mm,1/0.5	
PL102	3811-000389	70693052	WIRE-NO SHEATH CU;SPCW,300V,52.4mm,1/0.5	
PL103	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
PL104	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
PL105	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
PR101	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
PR102	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PR103	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
SB101	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
SB102	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
SC101	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC102	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC103	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC104	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC105	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC106	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC107	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC108	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
SC109	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
SC110	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
SC115	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
SC116	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
SC117	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
SC118	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
SC119	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
SC120	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
SC121	2203-005105	BY130488	C-CER,CHIP;0.68nF,5%,50V,C0G,1608	
SC122	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
SC123	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
SC124	2203-005105	BY130488	C-CER,CHIP;0.68nF,5%,50V,C0G,1608	
SC125	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
SC126	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
SC127	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
SC129	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SC130	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SC131	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
SC132	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
SC133	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
SD101	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
SD102	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
SD103	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
SD104	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
SD105	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
SD106	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
SD107	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
SE101	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
SE102	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
SE103	2401-000303	70795779	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
SE104	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE105	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
SE106	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE107	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
SE108	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
SE109	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE110	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE111	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE112	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE113	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE114	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE115	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE116	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
SE117	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
SIC01	1204-002094	BY631310	IC-AUDIO PROCESSOR;MM1647XJ,SSOP,34P,17.	
SL101	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL102	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL103	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL104	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL105	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL106	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL107	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL108	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
SL109	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
SL110	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
SL111	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
SL112	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
SQ101	0504-000152	BY530078	TR-DIGITAL;KSR2101,PNP,200mW,4.7K/4.7K,S	
SR101	2007-000116	BY230349	R-CHIP;120ohm,5%,1/10W,TP,1608	
SR102	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
SR103	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
SR104	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
SR105	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
SR106	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
SR107	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
SR108	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR109	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR110	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
SR111	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
SR112	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR113	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR114	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR115	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR116	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR117	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR118	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR119	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR120	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR121	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR122	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
SR123	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR126	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR127	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR128	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR129	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR130	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
SR131	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
SR133	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
SR134	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
SR135	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR136	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR137	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR138	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
SR139	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
SR140	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
SR141	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
SR142	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
SR143	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TC101	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC104	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC106	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC107	2203-001656	BY130453	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	
TC108	2203-000998	BY130446	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	
TD101	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
TD102	0403-000390	70795272	DIODE-ZENER;UZP33B,31.4-34.6V,1000MW,DO-	
TE101	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
TE102	2401-002300	BY130559	C-AL;47uF,20%,50V,GP,TP,6.3x11,5	
TE103	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
TEST_C	3708-001802	BY635008	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,STRAIGH	
TIC01	AK40-00025A	BY630508	TM BLOCK;TCSK0601PD25A,PAL B/G,I,D/K,UHF	RD-XS24SB,SG
TIC01	AK40-00026A	BY630509	TM BLOCK;TCPL0601PD25A,PAL B/G,SECAM L/L	RD-XS24SF
TL102	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
TL103	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
TR101	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
TR102	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR103	2007-000121	BY230351	R-CHIP;820ohm,5%,1/10W,TP,1608	
TR104	2007-000121	BY230351	R-CHIP;820ohm,5%,1/10W,TP,1608	
TR105	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR106	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR107	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
TR108	2007-000123	BY230306	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	
VB101	3301-001419	BY330073	BEAD-SMD;220ohm,1608,500mA,TP,133ohm/70	
VB102	3301-001419	BY330073	BEAD-SMD;220ohm,1608,500mA,TP,133ohm/70	
VB103	3301-001419	BY330073	BEAD-SMD;220ohm,1608,500mA,TP,133ohm/70	
VC101	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC102	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
VC103	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC104	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC120	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
VC121	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
VC122	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC123	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC124	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC126	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
VC127	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC128	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC129	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
VC130	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
VC131	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC132	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC133	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC134	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC135	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
VC136	2203-005105	BY130488	C-CER,CHIP;0.68nF,5%,50V,C0G,1608	
VC137	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC138	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VD101	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD102	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD103	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD104	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD105	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD106	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD107	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD108	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD109	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD110	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
VD111	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VD112	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VE101	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VE102	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VE103	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VE104	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
VE113	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
VE118	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VE119	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VE121	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE122	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE123	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE124	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE125	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE126	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE127	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
VE128	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
VE129	2401-000426	BY130103	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	
VIC01	0801-001094	BY631298	IC-CMOS LOGIC;74HC4051,MULTIPLEXER,SOP,1	
VIC02	1001-001293	BY631299	IC-VIDEO SWITCH;MM1507XNRE,-,SOT-26A,6P,	
VIC03	1204-002139	BY631339	IC-AUDIO PROCESSOR;MM1508,SOT,6P,-,PLAST	
VIC05	1201-002292	BY631348	IC-VIDEO AMP;MM1568D,SSOP,34P,17.6x7.6mm	
VIC07	1204-001748	BY631283	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,PLASTI	
VL106	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
VL107	2703-001973	BY330093	INDUCTOR-SMD;2.7uH,10%,1608	
VQ104	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
VQ105	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
VQ106	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
VQ107	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
VR106	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR115	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR116	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR117	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR118	2007-000100	70795719	R-CHIP;68Kohm,5%,1/10W,TP,1608	
VR119	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
VR120	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
VR127	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
VR128	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
VR129	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR130	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR132	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR138	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
VR139	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
VR141	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
VR142	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR143	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR144	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR145	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR146	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
VR147	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
VR151	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR154	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR156	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR157	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR158	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
W52	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
P003	**AK92-00766B**	**BY630591**	**ASSY PCB-SMPS;RD-XS24,HDD-RECORDER**	
BD1S01	0402-001608	BY430109	DIODE-BRIDGE;GBJ2J,600V,2A,SIP-4,BK	
C1P01	2401-001200	BY130290	C-AL;33UF,20%,50V,WT,TP,6.3X11,2.5	
C1P02	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1P03	2401-001200	BY130290	C-AL;33UF,20%,50V,WT,TP,6.3X11,2.5	
C1P04	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C1P05	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C1P06	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
⚠ C1S01	2201-000987	BY130164	C-CERAMIC,DISC;2.2NF,20%,400V,Y5U,BK,12.	
⚠ C1S02	2201-002044	BY130539	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,TP,8.5	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
⚠C1S03	2201-002044	BY130539	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,TP,8.5	
⚠C1S04	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
⚠C1S05	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
C1S10	2401-003030	BY130569	C-AL;220uF,20%,450V,GP,BK,30x35,10	
C1S11	2305-001029	BY130226	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	
C1S12	2201-000129	BY130258	C-CERAMIC,DISC;0.1nF,10%,1000V,Y5P,-,7x4	
C1S13	2401-004141	BY130562	C-AL;33uF,20%,35V,GP,TP,6.3x7mm,5	
C1S14	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1S15	2301-000481	BY130555	C-FILM,LEAD-PEF;10nF,5%,100V,TP,6.5x3.4x	
C1S16	2401-001200	BY130290	C-AL;33UF,20%,50V,WT,TP,6.3X11,2.5	
C1S30	2401-000385	70795431	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	
C1S31	2401-001126	BY130045	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	
C1S32	2401-003139	BY130469	C-AL;1000uF,20%,25V,WT,TP,10*20,5mm	
C1S33	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
C1S34	2401-003390	BY130501	C-AL;2200uF,20%,16V,LZ,TP,13x31.5,5	
C1S35	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
C1S36	2401-001126	BY130045	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	
CN1S01	3711-000203	BY634858	HEADER-BOARD TO CABLE;1WALL,2P/3P,1R,7.9	
D1P01	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D1P02	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D1P03	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D1P04	0402-001533	BY430120	DIODE-RECTIFIER;1N5408,1000V,3A,-,BK	
D1S01	0402-000012	BY430047	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	
D1S02	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
D1S03	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S30	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S31	0402-001194	BY430010	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	
D1S32	0402-001680	BY430137	DIODE-RECTIFIER;SF34,200V,3A,DO-201AD,TP	
D1S33	0402-001439	BY430132	DIODE-RECTIFIER;-,100V,3A,SHK75-11,BK	
D1S34	0402-001600	BY430133	DIODE-RECTIFIER;MBRF20100CT,100V,20A,ITO	
⚠F1S01	3601-000237	BY634950	FUSE-CARTRIDGE;250V,2A,SLOW-BLOW,CERAMIC	
IC1P01	1203-002183	BY631306	IC-SWITCH VOL. REG.;278R12,TO-220F-4L,4P	
IC1P02	1203-002183	BY631306	IC-SWITCH VOL. REG.;278R12,TO-220F-4L,4P	
IC1P03	1203-003217	BY631338	IC-POSI.FIXED REG.;G9233,TO-220F,4P,10.1	
IC1S01	1203-002805	BY631237	IC-PWM CONTROLLER;ICE2BS01,PDIP,8P,9.52X	
⚠IC1S02	0604-001028	BY530004	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	
IC1S03	AC14-12006D	70795271	IC;KA431Z,TO-92,TAPING	
⚠L1S01	AC29-00002A	BY634272	FILTER LINE NOISE;-,30mH,-,-,BLF-2116	
⚠L1S02	AC29-00002A	BY634272	FILTER LINE NOISE;-,30mH,-,-,BLF-2116	
PCON01	3710-002036	BY634997	SOCKET-BOARD TO BOARD;12P,1R,2.5mm,STRAI	
PCON02	3710-002036	BY634997	SOCKET-BOARD TO BOARD;12P,1R,2.5mm,STRAI	
PCON03	3711-001062	70699070	HEADER-BOARD TO CABLE;BOX,6P,1R,2mm,STRA	
PCON04	3711-000240	BY635010	HEADER-BOARD TO CABLE;1WALL,4P,1R,3.96MM	
PCON05	3711-003942	BY634884	HEADER-BOARD TO CABLE;BOX,2P,1R,2mm,STRA	
PD1	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
PD2	0403-000509	BY430004	DIODE-ZENER;MTZJ5.6B,5.4-5.7V,500MW,DO-3	
PE1	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
PFCD1	2301-000129	70796098	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	
PL1	AC27-12001N	70796213	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
PPLD1	AH27-00039A	BY330081	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	
PQ1	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000mW,TO	
PQ2	0501-000290	70795818	TR-SMALL SIGNAL;KSA643-Y,PNP,500mW,TO-92	
PR1	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR2	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR3	2001-000588	BY230405	R-CARBON;3.3Kohm,5%,1/4W,AA,TP,2.4x6.4m	
PR4	2001-000508	70795022	R-CARBON;220KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR5	2001-000508	70795022	R-CARBON;220KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR6	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR7	2001-000508	70795022	R-CARBON;220KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR8	2001-000508	70795022	R-CARBON;220KOHM,5%,1/8W,AA,TP,1.8X3.2M	
PR9	2001-000588	BY230405	R-CARBON;3.3Kohm,5%,1/4W,AA,TP,2.4x6.4m	
⚠PT01	AC26-00014J	BY330097	TRANS SWITCHING;EER-3534,D-R150,RD-XS24,	
Q1P01	0505-001522	BY530083	FET-SILICON;FQP33N10,N,100V,33A,52mhom,1	
Q1S01	0505-001729	BY530077	FET-SILICON;SPA04N60C3,N,600V,4.5A,0.85O	
R1P01	2001-000855	BY230025	R-CARBON;560OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1P02	2004-000459	70795638	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R1P03	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P04	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S01	2002-000121	BY230334	R-COMPOSITION;1Mohm,10%,1/2W,AA,TP,3.5x9	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
R1S10	1404-001361	BY230396	THERMISTOR-NTC;3ohm,4A,-,35mW/C,-,9,TP	
R1S11	2003-000994	BY230027	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
R1S12	2003-000994	BY230027	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
R1S13	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S14	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S15	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S16	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S17	2001-000894	BY230401	R-CARBON;6.8ohm,5%,1/8W,AA,TP,1.8x3.2mm	
R1S18	2001-000405	70795607	R-CARBON;180OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S19	2004-000459	70795638	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R1S20	2003-000105	BY230146	R-METAL OXIDE:0.33ohm,5%,2W,AD,TP,6x16mm	
R1S21	2001-000527	70795018	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S22	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S30	2001-000062	70796173	R-CARBON;47OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1S31	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S32	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S33	2004-000869	70795640	R-METAL;3Kohm,1%,1/8W,AA,TP,1.8x3.2mm	
R1S34	2004-000459	70795638	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R1S35	2003-000148	BY230003	R-METAL OXIDE:100ohm,5%,2W,AE,TP,6x16mm	
VA1S01	1405-000186	70796217	VARISTOR;470V,2500A,17.5x7.5mm,TP	
VA1S02	1405-001026	BY634022	VARISTOR;470V,600A,9x7mm,TP	
ZD1P01	0403-000390	70795272	DIODE-ZENER;UZP33B,31.4-34.6V,1000MW,DO-	
ZD1S01	0403-000713	BY430110	DIODE-ZENER;MTZJ20B,18.63-17.7V,500MW,DO	
ZD1S02	0403-001318	BY430107	DIODE-ZENER;MTZJ4.3B,4.17-4.43V,500MW,DO	
P007	**AK92-00765A**	**BY630542**	**ASSY PCB-KEY;D-R150,SINGLE RECORDER**	
FL286	3809-001667	BY635013	FFC CABLE-FLAT;30V,80C,70mm,10P,1.25mm,U	
KC101	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
KC102	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
KC103	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
KC104	2202-000173	BY130262	C-CERAMIC,MLC-AXIAL;1nF,10%,50V,Y5P,-,1.	
KC105	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
KCON01	3708-001803	BY635009	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,ANGLE,T	
KD101	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
KD102	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
KD103	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
KD104	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
KD105	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	
KD106	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
KE101	2401-004159	BY130568	C-AL;470uF,##20%,10V,-,TP,10x9,-	
KE102	2401-004159	BY130568	C-AL;470uF,##20%,10V,-,TP,10x9,-	
KE103	2404-001272	BY130563	C-TA,CHIP;100uF,20%,16V,-,TP,7343	
KIC01	1003-001561	BY631280	IC-LED DRIVER;PT6961,SOP,32P,300MIL,-,40	
KIC02	AK07-00040A	BY430136	LED DISPLAY;D0505003,D-R150,16,74,32,63.	
KIC03	MF32-00001A	BY630545	MODULE REMOCON;KSM-713TC5,37.9KHZ,940NM,	
KL101	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
KL102	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
KR101	2001-000837	70795045	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
KR102	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
KR103	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
KR104	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
KR105	2001-000734	70795040	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
KR106	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
SW01	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW02	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW03	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW04	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW05	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW06	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW07	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW08	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW09	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW10	3409-001082	BY635007	SWITCH-DETECTOR;20V DC,50MA,SPST,30GF,-	

MEMO

Index to parts and controls

See pages with arrows for details.

Front panel

Pull down here to open.
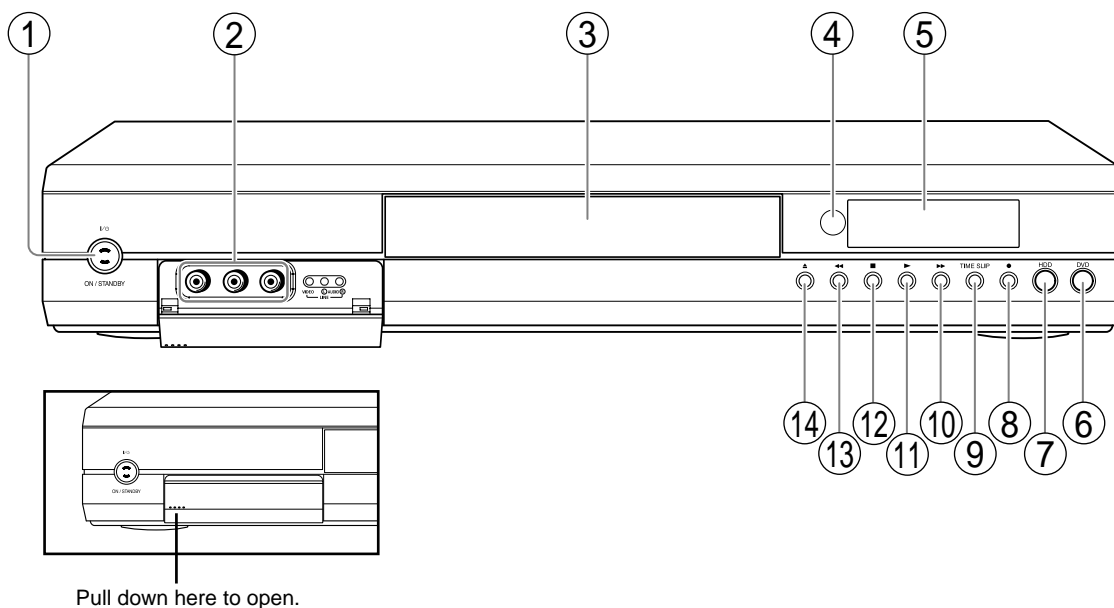
Note
• Do not place a heavy object on the cover while it is
  open. Doing so may damage the recorder.

* The above illustration displays the front panel with the cover open. See the following page on how to open or close the cover.

1 ON/STANDBY button ⇨ pages 20, 21
Turns the power on/restores the unit in the
standby mode.

2 LINE jacks ⇨ page 39
Use this when recording from other input source
such as a VTR or a camcorder.

3 Disc tray ⇨ page 20
Loads a disc into the disc drive.

**4 Remote sensor ⇨ page 12 in "INSTALLATION
GUIDE"**

5 Front panel display ⇨ page 15

6 DVD button ⇨ page 37, 46, 56
Press this to operate a disc inside the disc tray.

7 HDD button ⇨ page 37, 46
Press this to operate the HDD.

8 ● (REC) button ⇨ page 37, 40
Starts recording.

9 TIME SLIP button ⇨ page 58, 59
Selects the time slip mode.

10 ►► (FWD) button ⇨ page 48
Scans the picture forward.

11 ► (PLAY) button ⇨ page 56
Starts playback.

12 ■ (STOP) button ⇨ page 40, 47
Stops playback or recording.

13 ◄◄ (REV) button ⇨ page 48
Scans the picture backwards.

14 ▲ (OPEN/CLOSE) button ⇨ page 20
Opens and closes the disc tray.

Display

1 **Disc indicator**
Illuminates when a disc is loaded.

2 **Recording indicator**
Illuminates when recording.

3 **HDD/DVD indicator**
Indicates the operating disc drive.
HDD: When the HDD is selected.
DVD: When the DVD drive is selected.

4 **Programme recording indicator**
Illuminates when the recorder holds a timer programme.
It keeps illuminating when executing a timer recording.

5 **PSO (Progressive) indicator**
Illuminates when video signals are output in the progressive format.

6 **Multi display**
Displays the current channel, elapsed time, remaining time, input selection, picture quality mode or some operational status such as playing, etc.
When the power is turned off, it displays the current time.

7 **DVD-RAM indicator**
Illuminates when a DVD-RAM disc is loaded.

8 **DVD-R/RW indicator**
- R : Illuminates when a DVD-R disc is loaded.
- RW : Illuminates when a DVD-RW disc is loaded.

Rear panel

① **Power cord ➡ page 15 in "INSTALLATION GUIDE"**
Connects to a wall outlet.

② **Ventilation fan**

③ **DIGITAL AUDIO OUT COAXIAL jack ➡ page 20 in "INSTALLATION GUIDE"**
Use this to connect the recorder to an audio receiver equipped with a coaxial digital audio input jack.

④ **AV OUT 1, AV OUT 2 jacks ➡ page 16 in "INSTALLATION GUIDE"**
Outputs video and audio signals to a connected TV or amplifier.

⑤ **COMPONENT OUT jacks ➡ page 17 in "INSTALLATION GUIDE"**
Outputs video signals to a connected TV or monitor.
Connects to a TV or monitor equipped with component video jacks.

⑥ **AV2(EXT) socket ➡ page 39**
Use this socket when connecting the video or other equipment that has the terminal in this shape.

⑦ **VHF/UHF RF IN (FROM ANT.) input socket ➡ page 14 in "INSTALLATION GUIDE"**
Connects to an aerial or satellite signal.

⑧ **VHF/UHF RF OUT (TO TV) output socket** ▷
page 14 in "INSTALLATION GUIDE"
Connects the supplied coaxial cable to a TV.

⑨ **AV1(TV) socket** ▷ **page 39**
- Use this socket when connecting the TV that has the terminal in this shape.
- Use this socket when connecting the video or other equipment that has the terminal in this shape.

Index to parts and controls (Continued)

Remote control
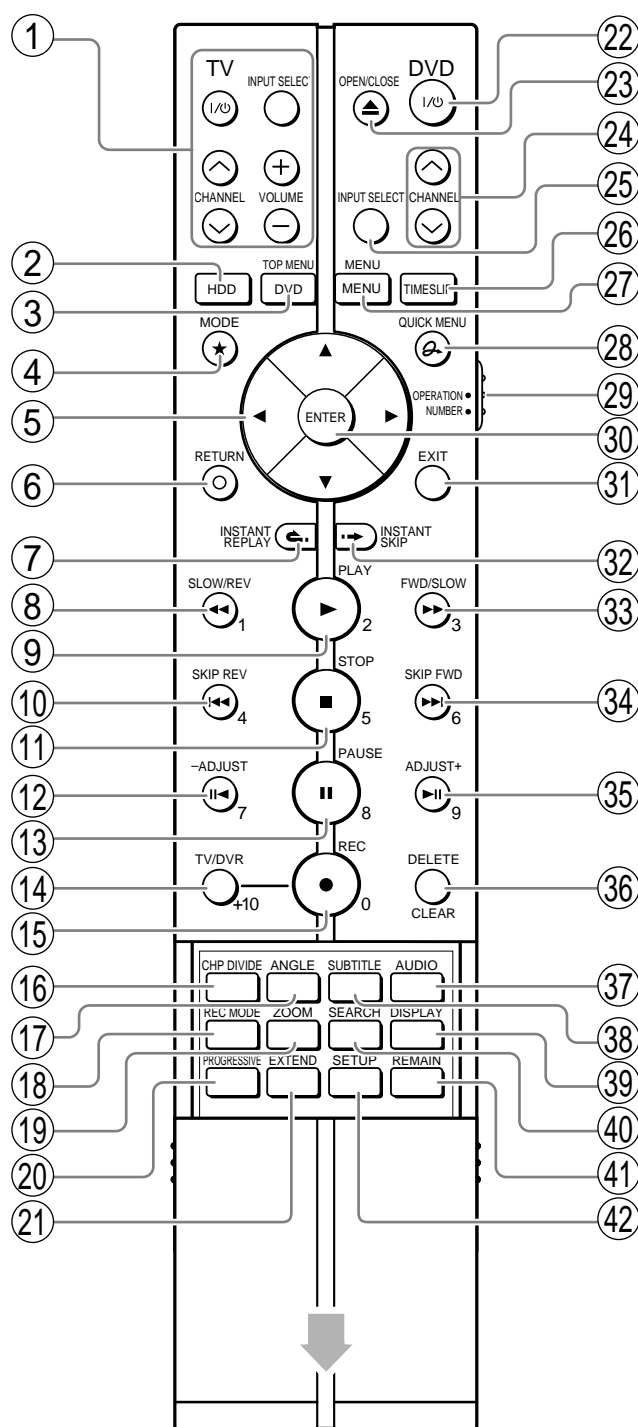
Slide to open.

① Buttons for TV operation ⇨ page 38 in "INSTALLATION GUIDE"

② HDD button ⇨ page 37, 46

③ DVD button ⇨ page 37, 46, 56

④ MODE button ⇨ page 46

⑤ Direction buttons (▲/▼/◄/►) ⇨ page 46, 114

⑥ RETURN button*2

⑦ INSTANT REPLAY button ⇨ page 47

⑧ SLOW/REV button ⇨ page 48

⑨ PLAY button ⇨ page 56

⑩ SKIP REV button ⇨ page 46, 48

⑪ STOP button ⇨ page 40, 47

⑫ ADJUST (−) button ⇨ page 30, 48

⑬ PAUSE button ⇨ page 38, 47

⑭ TV/DVR button ⇨ page 38

⑮ REC button ⇨ page 37

⑯ CHP DIVIDE button ⇨ page 77

⑰ ANGLE button ⇨ page 57

⑱ REC MODE button ⇨ page 29

⑲ ZOOM button ⇨ page 60

⑳ PROGRESSIVE button ⇨ page 17 in "INSTALLATION GUIDE"

㉑ EXTEND button ⇨ page 36

㉒ DVD ON/STANDBY button ⇨ page 20, 21

㉓ OPEN/CLOSE button ⇨ page 20, 21

㉔ CHANNEL buttons ⇨ page 20, 37

㉕ INPUT SELECT button ⇨ page 40

㉖ TIMESLIP button ⇨ page 58, 59

㉗ MENU button*1

㉘ QUICK MENU button ⇨ page 24, 70

㉙ OPERATION/NUMBER switch ⇨ page 23 in "INSTALLATION GUIDE"

㉚ ENTER button ⇨ page 46, 114

㉛ EXIT button ⇨ page 31

㉜ INSTANT SKIP button ⇨ page 47

㉝ FWD/SLOW button ⇨ page 48

㉞ SKIP FWD button ⇨ page 46, 48

㉟ ADJUST (+) button ⇨ page 30, 48

㊱ DELETE button ⇨ page 42

㊲ AUDIO button ⇨ page 57, 62

㊳ SUBTITLE button ⇨ page 57

㊴ DISPLAY button ⇨ page 68

㊵ SEARCH button ⇨ page 61

㊶ REMAIN button ⇨ page 29

㊷ SETUP button ⇨ page 114

*1 MENU
   Use this to display a menu screen that is recorded on a DVD video disc.
   Operate the menu screen as the same manner as "Locating a title using the top menu (⇨ page 56)".
   A menu screen is not recorded on some discs.

*2 RETURN
   Returns to the previous screen (the screen may be specified depending on the disc).
   Refer to the instructions of the disc.

Before operating this recorder

■ Is your recorder ready?
- Refer to the supplied "INSTALLATION GUIDE" manual and finish the necessary preparations.
- Turn on the connected equipment such as a TV or audio system and select the input from the recorder.

■ Turning the power on

(This owner's manual instructions are based on the assumption that all proper connections have been completed and the TV is turned on.)

Press ON/STANDBY on the front panel of the recorder or on the remote control.

ON/STANDBY button

ON/STANDBY button

CHANNEL buttons
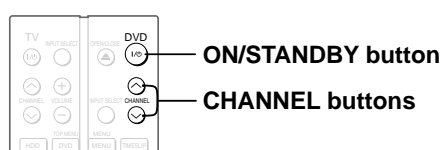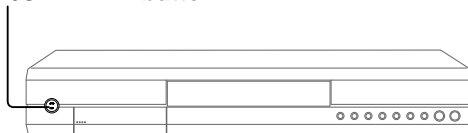
When the power turns on, the display of the front panel shows "ON".
After a few seconds, a start-up screen appears.
The following icon appears at the top right corner of the screen.

e.g.
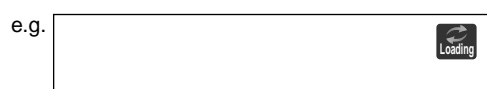
When this icon disappears, the recorder is ready to operate. If the disc drive contains a disc, it takes a little longer to start up.

The display of the front panel changes to the counter. If a disc is not loaded, it shows the current channel.

■ Viewing TV channels through this recorder
After turning the power on, the recorder will output TV channel signals to the connected TV (also in the stop mode).
You can select a desired channel by pressing the CHANNEL or the number buttons.

■ Loading a disc
Check disc compatibility beforehand (⇨ page 6) and use a proper playable disc.

Caution
- Keep your fingers well clear of the disc tray. Neglecting this may cause serious personal injury. Keep a close watch on children.
- Do not use a cracked, deformed, or repaired disc.

1 Open the disc tray.
  Press ▲ on the front panel or the OPEN/CLOSE button on the remote control.

▲ button

OPEN/CLOSE button
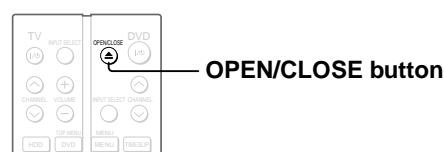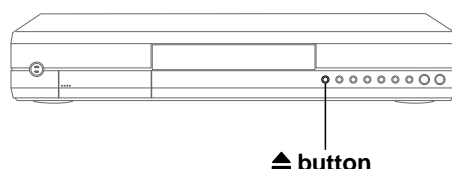
2 Insert a disc.
  Disc without a cartridge
  Insert with the playback side down.

  There are two kinds of disc size. Place a disc to fit the guide. If a disc is out of the guide, it may result in damage to the disc or malfunction.
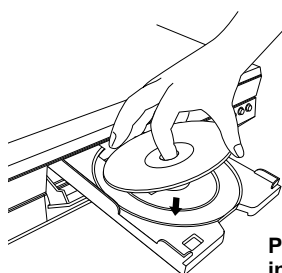
Place a disc in the inside hollow.

DVD-RAM disc with cartridge (TYPE1/TYPE2/TYPE4)
Single sided
Turn the printed side up, and insert the cartridge into the tray frame following the direction of the arrow on the cartridge.
Double sided
Turn the desired recording/playback side up, and insert the cartridge into the tray frame following the direction of the arrow on the cartridge.
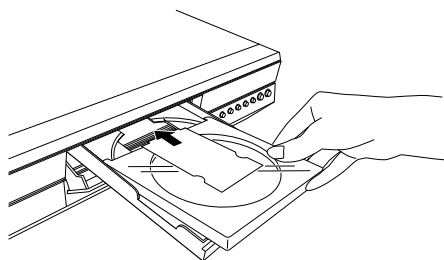
3 Close the disc tray.
Press ▲ on the front panel or the OPEN/CLOSE button on the remote control.

Notes
• Use the button on the front panel or the remote control to open and close the disc tray. Do not push or hold the disc tray while it is moving. Doing so may cause the recorder to malfunction.
• Do not insert a disc which is unplayable, or any object other than a playable disc.
• Do not apply downforce to the disc tray. Doing so may cause the recorder to malfunction.
• If the disc tray stops while closing, the mechanical protection system of this recorder will open it. Do not force it to close. Doing so may cause malfunction.
• If the disc tray will not open, turn the recorder off, and press the ▲ button on the front panel or the OPEN/CLOSE button on the remote control. This may turn the recorder on and open the disc tray. If it still won't open, contact your nearest TOSHIBA dealer.

■ **Turning the power off**
Press ON/STANDBY on the front panel of the recorder or on the remote control.

The "Unloading" icon appears at the top right corner of the screen, and the display of the front panel shows "OFF", then the power turns off (Standby mode.)

Caution
• If the power fails or the power cord is disconnected from a wall outlet while the recorder is in operation, the HDD or a loaded disc may become recording disabled. In such a case, executing an initialization of the disc using the formatting function of the recorder may refresh it. However, all contents stored on the disc will be completely erased by this initialization process.
• This recorder may indicate alert messages with some DVD-RAM discs right after insertion. If such a disc is used for playback or recording on other equipment, all data in the disc may be damaged and the disc will not be played. By executing an initialization of the disc using the formatting function of the recorder, the disc will become operational.
• If the recorder freezes and does not respond at all, leave it alone for about 15 minutes or longer. This may restore the recorder. After the recorder has recovered, turn it off once and turn it on again to use as usual. If the recorder is still inoperable after more than 15 minutes have passed, press and hold the ON/STANDBY button on the front panel for about 10 seconds or longer. The recorder is forced to quit and the power turns off. Turn the recorder on again and use it as usual. (This is an emergency measure, which may cause losses and/or damages of data. Avoid casual use of this measure. If you try this while the recorder is working properly, especially while the "Loading" or "Unloading" icon is flashing, it may result in initializing of the HDD.) (This 15-minute measure is available only when "Screen protector" is set to "On." (▷ page 120))

Note
• If there are any performance malfunctions of the HDD or the DVD-RAM drive, immediately discontinue use of this recorder, and disconnect the power cord from a wall outlet, then contact your dealer. Continuous use of the recorder in such a condition will aggravate the condition and result in increased cost and repair time.

■ **Disc tray lock**
You can lock the disc tray.
Press and hold ■ on the front panel or STOP on the remote control for longer than about 3 seconds.
To unlock, during stop press the button for longer than about 3 seconds.

Note
• Turning the power off also unlocks the disc tray.

Before operating this recorder (Continued)

■ **Start-up/Shutdown (closing) icons**

These icons are displayed at the top right corner of the screen when startup or finishing. While they are flashing, the recorder is operating as follows:

Loading	Start-up, reading a disc, finishing the recording
Un loading	Unloading a disc, finishing the operation
Open	Opening a disc tray
Close	Closing a disc tray

■ **Status display**

Each time you operate the recorder, the following displays appear on the TV screen to indicate the status of the recorder.

Status display

e.g.
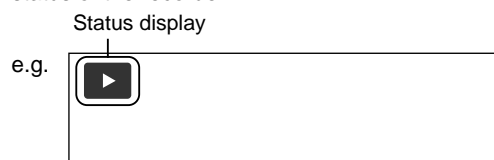
Main on-screen displays
(Depending on the disc, some of these may not appear.)

▶ : Playback
❚❚ : Pause
■ : Stop
▶▶ : Fast-forward*
◀◀ : Fast-reverse*
▶▶❙ : Forward skip
❙◀◀ : Reverse skip
❚▶ x1/2 : Forward slow-motion
◀❚ x1/2 : Reverse slow-motion
❚❚▶ : Forward frame by frame playback
◀❚❚ : Reverse frame by frame playback
● : Recording
●❚❚ : Recording pause
Title End : When title playback is completed
↦ : Instant skip
↰ : Instant replay
Chapter Divide : Chapter division
↰ : Forward skip by 1/20
↲ : Reverse skip by 1/20

* The number of the mark varies according to the playback speed you select.

Notes
- To disable the status display, set "On screen display" (➪ page 120) to "Off."
- You can add the current status of the settings to this display. See ➪ page 68.

Main function buttons

These buttons are the main gate to various functions of this recorder. Whenever you press any of these buttons, you can get a list or menu of functions to access to the desired one directly.
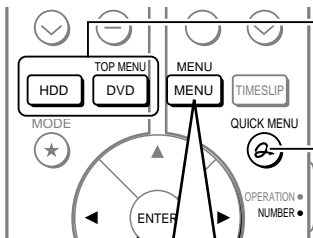
Menu

Timer recording

Watch programme

Edit programme

Dubbing

Initialize DVD

Other settings

You can confirm/change timer recording for programmes or set timer recording for a new programme.
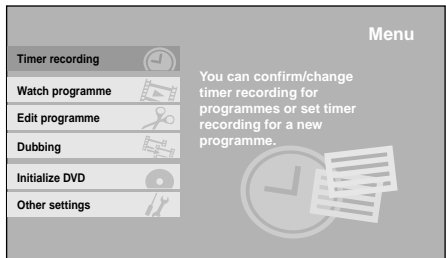
- This menu appears also when the recorder is turned on. If you want to disable this feature, change the setting (⟹ page 120).

Press ▲ / ▼ to select an item, then press ENTER.

Item	Function	Page
Timer recording	A list of timer programmes appears.	30
Watch programme	Recorded contents are listed in a thumbnail view.	46
Edit programme	A menu of editing functions appears.	82
Dubbing	A menu of dubbing functions appears.	87
Initialize DVD	You can initialize a loaded disc.	26
Other settings	A setup menu appears.	114

Introduction

Recording

Playback

Editing

Function setup

Others

Main function buttons (continued)

■ **Quick Menu operation**

To access various optional functions of this recorder, open the Quick Menu. The Quick Menu displays a list of selections relevant to your current mode.

● **Opening a Quick Menu**

1) Press QUICK MENU.

The following menu ("Quick Menu") appears. (Actual selections vary depending on operational status.)

e.g.

```
⌒  Quick Menu
   Restart title
   Title information
   Bit rate
   Special playback mode
   Exit
```
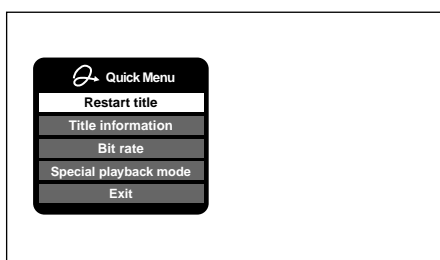
2) Press ▲ / ▼ to select an item, then press ENTER.

● **To exit the Quick Menu**

Press QUICK MENU again.
Alternatively
Select "Exit" with ▲ / ▼, then press ENTER.

Hint on reading this manual

The following icons show the playable discs for each function described on this instruction manual.

HDD : HDD

DVD-RAM : DVD-RAM disc

DVD-RW (VR) : DVD-RW disc (VR mode)

DVD-RW (Video) : DVD-RW disc (Video mode)

DVD-R (VR) : DVD-R disc (VR mode)

DVD-R (Video) : DVD-R disc (Video mode)

DVD-VIDEO : DVD video disc

VCD : VIDEO CD

CD : Audio CD

Most instructions are based on remote control operation, unless otherwise noted. You can use the buttons on the remote control and those on the main unit as well when they have the same function.

Notes
- Note that all recording content may be deleted if the unit is disconnected from a wall outlet, or a power failure occurs, during recording.
- If a power failure occurs within 5 minutes prior to the programmed recording start time, the programmed recording may not be executed.

If copy protection signal is detected during recording on this recorder, the recording automatically pauses and a message appears. In this case, the PAUSE button cannot release the recording. (It is possible to end the recording by pressing the STOP button.) If the copy protection signal continues, the recording will terminate.

Recording

Recording variations for many types of programmes or situations.

● **Before recording**

● **Programing a recording (REC MENU)**

● **Recording a TV programme**

● **Recording an external source**

● **Deleting recorded contents**

● **Others**

Before recording

Please be sure to read this section to get ready for your recording.

Initializing a disc

Initialize a new DVD disc before using on this recorder.
(Do not initialize a DVD-R if you use it in Video mode.)

■ Disc type and initialization

HDD		No need[*1]
DVD-RAM		Required[*2]
DVD-RW	VR mode	Required
	Video mode	Required
DVD-R	VR mode	Required[*3]
	Video mode	No need

[*1] The HDD which has become unoperatable because of its troubles may be recovered by initializing.
[*2] There are the following 2 ways in DVD-RAM initializing.
  • Logical format: Normally use this method.
  • Physical format: Use this method if a disc cannot be recovered by the logical format. (There is no guarantee that all such discs can be recovered.)
[*3] Re-initializing is not possible to DVD-R.

● Initializing a disc (Logical format)

1) **Load a disc.**
2) **Press MENU.**
3) **Press ▲ / ▼ to select "Initialize DVD", then press ENTER.**


```
                                          Menu
 Timer recording          Select this menu when you want
 Watch programme          to initialize a DVD.
 Edit programme
 Dubbing
 Initialize DVD
 Other settings           Select  Set   EXIT TV
```
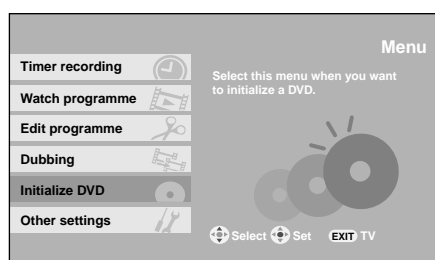
4) **Select the recording mode and input the disc data if necessary.**

DVD-RAM

```
        DVD format
 Disc Number   0 0 1 –   E        — Can be changed.
 Disc Name               E        — Can be changed.
 DVD mode      VR mode   E        — Fixed to "VR mode".
        Unformat
     Start      Cancel
```

DVD-RW

```
        DVD format
 Disc Number   – – – –   E        — Cannot be changed.
 Disc Name               E        — Can be changed.
 DVD mode     Video mode E        — Select "Video mode"
        Unformat                    or "VR mode".
     Start      Cancel
```

DVD-R

```
        DVD format
 Disc Number   0 0 1 –   E        — Can be changed.
 Disc Name               E        — Can be changed.
 DVD mode      VR mode   E        — Fixed to "VR mode".
        Unformat
     Start      Cancel
```

Numbering a disc
The recorder automatically number discs when initializing. However, you can assign a desired number (using 3 digits) and designate sides A and B on a double-sided disc.

(1) Press the ▲ / ▼ buttons to select "Edit" of "Disc Number" then press the ENTER button.

(2) Press the ▲ / ▼ / ◄ / ► buttons to enter digits.

(3) Press the ENTER button.

Naming a disc

(1) Press the ▲ / ▼ buttons to select "Edit" of "Disc Name" then press the ENTER button.

(2) Enter a disc name following the procedure of "Entering Characters" (page 128).

(3) Press the MODE button to save the name then exit.

Selecting the DVD mode

(1) Press the ▲ / ▼ buttons to select "Edit" of "DVD mode" then press the ENTER button.

(2) Press the ▲ / ▼ buttons to select the mode.

(3) Press the ENTER button.

5) Press ▲ / ▼ / ◄ / ► to select "Start", then press ENTER.

6) Read the message, and press ◄ / ► to select "Start", then press ENTER.

```
┌─────────────────────────────┐
│         DVD format          │
│                             │
│  Entire disc contents will be │
│  erased if disc is formatted. │
│         Proceed?            │
│                             │
│      Start    Cancel        │
└─────────────────────────────┘
```

Initializing starts.

Notes
- Discs may be unusable if there are deterioration or defects in it.
- When a finalized DVD-RW is loaded, playback starts automatically. To initialize, stop the playback then follow the above procedure.

● **Initializing a disc (Physical format)**

Use this method when a DVD-RAM is not recovered by logical format method or when the recorder does not read a DVD-RAM which has been used. (There is no guarantee that all such discs will be recovered.)

1) Load a DVD-RAM.

2) Open the lid of the remote control, and press SETUP.

(Alternatively, press MENU and select "Other settings" and press ENTER.)

3) Press RETURN then ◄ / ► to select "Management settings", and press ENTER.

4) Press ▲ / ▼ to select "DVD-RAM physical format" then press ENTER.

5) Read the message, and press ◄ / ► to select "Yes", then press ENTER.

```
┌─────────────────────────────┐
│              ⓘ              │
│  Warning: It will take approximately │
│  70 minutes to format a 4.7GB DVD │
│  and all data will be erased. │
│  Confirm that timer programming is │
│  not scheduled. Proceed?    │
│        Yes        No        │
└─────────────────────────────┘
```
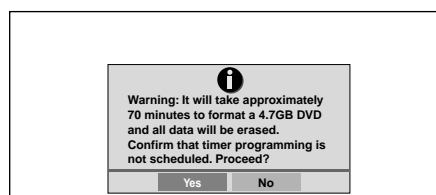
6) Ask the question on shutting down using ◄ / ►, then press ENTER.

Notes
- The physical format process may fail if executed to a dirty DVD-RAM. Also the disc may be difficult to record even it is finished. Before executing DVD-RAM physical format process, be sure to confirm the disc is not dirty. Clean it if necessary. If the disc has scratches or dust beyond cleaner's efficacy, do not execute DVD-RAM physical format process on the disc.
- The following DVD-RAM require physical formatting:
  – A disc which is not formatted correctly.
  – The disc which has some errors during writing because of dirt on the disc, and cannot be further recorded, or cannot initialize normally.
- Physical formatting does not work if the disc contains a lot of voids beyond the limitation of the recorder.
- If an error occurs in physical formatting, "ERR01" appears in the front panel display. To turn it off, press the DISPLAY button.

Initializing a disc (Continued)

Setting for recording on a DVD-R/RW disc in Video mode

Video mode recording enables playback of your favorite contents on other devices such as DVD players.
Finish this setting beforehand if you make a Video mode recording, that is;
- when you record on a DVD-R/RW (Video mode).
- when you record contents which will be copied from the HDD to a DVD-R/RW (Video mode).

■ Items to set up

When recording in Video mode, there are some restrictions by DVD-Video standard.
Therefore, it is necessary to set up these items below. Set up the items in advance before copying contents from the HDD to a DVD-R/RW (Video mode) disc.

● DVD compatible mode
Only the left channel sound and the right channel sound are available for recording in Video mode under DVD-R/RW standard.

Off: This is not for recording on a DVD-R/RW disc. Depending on Picture/Audio settings, making DVD Video may not be possible. (When recording directly on a DVD-R/RW disc of Video mode, the recording proceeds with "On (Mode I)" on even though "Off" is set.)

On (Mode I): In multichannel broadcasting, only the left channel sound is recorded.

On (Mode II): In multichannel broadcasting, only the right channel sound is recorded.

● Aspect ratio (Video mode)
"4:3" and "16:9" cannot be mixed in one title.
Therefore, set the aspect ratio before recording.
4:3: Set the aspect ratio to 4:3
16:9: Set the aspect ratio to 16:9

● DVD-Video: CHP create
This is the setting to divide a title into some chapters. It is convenient to skip scenes.
Off: Chapter dividing is not available.
5 min, 10 min, 15 min, 20 min:
Select an interval for chapter dividing.

Note
• When the number of chapters reaches a limit, chapters are not divided anymore. The limit number of chapters is dependent on conditions of a DVD-R/RW disc.

Note
• This setting is not effective in dubbing.

How to set up

1 Press SETUP during stop.

SETUP menu appears.

2 Select "DVD recorder operation" and press ENTER.
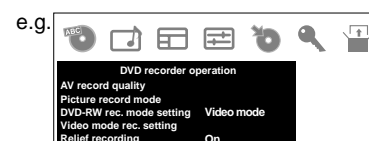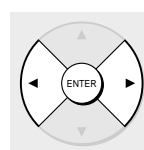
3 Select "Video mode rec. setting" and press ENTER.
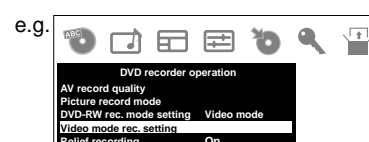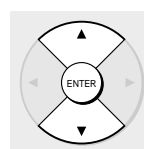
4 Press ▲ / ▼ to select an item then press ◄ / ► to change the setting, and finally press ENTER.
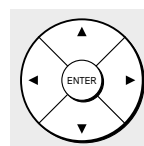
Checking the disc space

1) Press REMAIN.
The current capacity per disc is displayed at the bottom of the screen. The current capacity of the selected drive is displayed on the front panel display.

2) After checking the capacity, press the button again to turn off the display.

Selecting the recording mode

1) Select the drive by pressing HDD or DVD.
CONTENT MENU appears.
Pressing the same button turns it off.

2) Press REC MODE repeatedly to select the recording mode.
Each time you press the button, the recording mode display on the front panel changes.

e.g. When a 4.7GB single sided DVD-RAM is used

	Recording time	Picture quality
XP	About 1 hour	Superior to "SP".
SP	About 2 hour	Standard quality.
LP	About 4 hour	Inferior to "SP".
MN	Adjustable. Make the settings of "Manual mode set" (⇨ page 122).	

Note
• You cannot change the recording mode while recording.

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

Programing a recording (REC MENU)

■ Preparation

- When you record on a DVD-RAM/R/RW, load it into the recorder.
- When you record on a DVD-R/RW (Video mode) or when you record contents which will be copied to a DVD-R/RW (Video mode), make the necessary settings (▷ page 28).
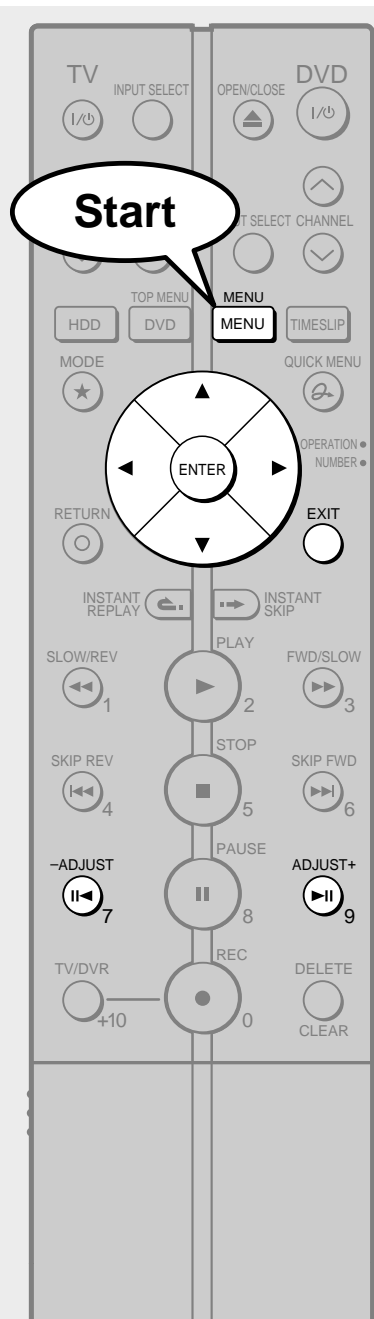
Start

1 **Press MENU.**

The menu appears.

2 **Press ▲ / ▼ to select "Timer recording", then press ENTER.**
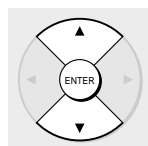
3 **Press ENTER.**
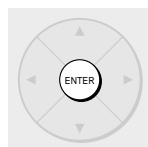
"Ch" is ready for setting.

e.g.

REC MENU Basic						10/23(Su)17:50
Ch	Date	Start	End	Media	Pict.	Audio
1	-------	--	--	HDD	SP	4.6 D/M1

Rec time –h––m/ HDD remaining (excluding above)   51h 24m

4 **Select an item by pressing ◄ / ►, then press ADJUST (II◄/►II) to set the item.**
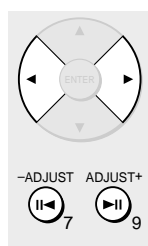
For details of the setting items, see ▷ page 33.

e.g.

REC MENU Basic						10/23(Su)17:50
Ch	Date	Start	End	Media	Pict.	Audio
1	10/30(Su)	7 00	– --	HDD	SP	4.6 D/M1

Rec time –h––m/ HDD remaining (excluding above)   51h 24m

Rec folder	ROOT
Genre	No genre
DVD mode	On(I)

| Edit title name | Advanced | Cancel | Set timer |

5 When complete, press ENTER.

e.g.

REC MENU Basic						10/23(Su)17:50

Ch	Date	Start	End	Media	Pict.	Audio
1	10/30(Su)	7 00	8 30	HDD	SP 4.6	D/M1

Rec time –h––m/ HDD remaining (excluding above) 51h 24m

6 Press ▼ to select "Set timer" then press ENTER.

e.g.

Rec folder	ROOT
Genre	No genre
DVD mode	On(I)
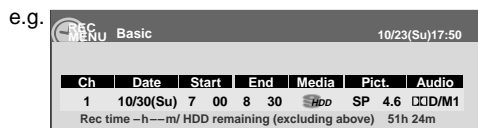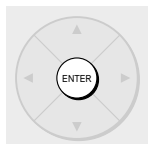
Edit title name   Advanced   Cancel   **Set timer**
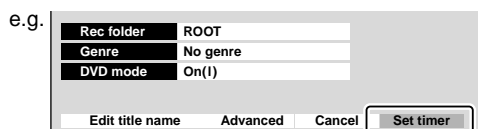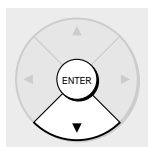
7 To programme another recording, press ▼ to move to the next line, then repeat steps 3 to 6.

8 Press EXIT to exit.

Your programme is entered.
• If you want to turn off the power, press the ON/STANDBY button.

EXIT

Note
• The disc tray does not close automatically, even when the recording start time arrives. Set the recorder loaded an available DVD-RAM/R/RW disc beforehand.

■ **Correcting a timer program**

1) **Press MENU.**

2) **Press ▲ / ▼ to select "Timer recording", then press ENTER.**

3) **Press ▲ / ▼ to select a timer program you want to change, then press ENTER.**

4) **Follow steps 4 to 6 to change the settings.**

5) **Press EXIT to exit.**

Important
• You cannot correct a timer program within 5 minutes before the recording start time. You can only delete the timer program.

Programming a recording (REC MENU) (Continued)

■ **Deleting a timer program**

The maximum timer program capacity is 32. Any new program will be rejected if the recorder is full. To enter a new program, you must cancel an existing one.

1) Press MENU.

2) Press ▲ / ▼ to select "Timer recording", then press ENTER.

3) Press ▲ / ▼ to select a timer program you want to delete.

4) Press QUICK MENU.
The Quick Menu appears.

5) Press ▲ / ▼ to select "Program cancel", then press ENTER.
Check the message, then delete the entry.

Note
• You cannot delete a timer program while another is executed.

■ **To stop a programmed recording**

1) Select the recording drive by pressing HDD or DVD twice.

2) Press ■ on the front panel twice.
When you press the ■ button once, a message appears. While the message is displayed, press the ■ button once again.

Note
• If you press the STOP button on the remote control, a message appears. Select "Yes", then press the ENTER button.

■ **Checking the remaining volume**

1) On REC MENU Timer Programming, press QUICK MENU.

2) Press ▲ / ▼ to select "Disc budget calculation" then press ENTER.
The Disc budget calculation menu appears.

3) Press ▲ / ▼ to select a timer program, then press ENTER.
The recorder calculates on a bar graph how much a specific program (identified by a check mark) will occupy on the disc.

Pressing the ADJUST button can display or remove the check mark.

e.g.

Selected programme   Available disc space
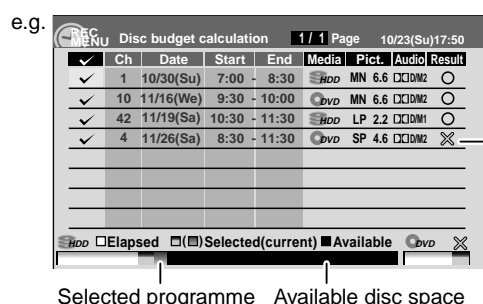
When the entry item is marked X, the recording does not fit. Change the setting.
△ means this recording will not be executed due to limitation of recording time, if another is executed.

4) Correct the parameters of the timer program if necessary.

(Skip to step 6 if you do not need this.)
Select an item you want to modify and press the ENTER button. The item will be ready to be altered. (When "High rate save" is set to "On", "Pict." cannot be changed.)
Press the ADJUST button to modify. When complete, press the ENTER button.

5) Press MODE.
Program modification is registered.

6) Press EXIT to exit the GUI.

Notes
• The nearest 48 programs are calculated at a time.
• While the recorder is preparing for or executing a programmed recording, any program modification cannot be registered. Only programs which will start after 5 minutes or later can be modified.
• Available disc volume is not displayed for a DVD-R/RW disc on which DVD-Video finalize process was executed.

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■ Setting items at step 4, 7 (⇨ page 30)

Exec	√	A timer program with this mark will be executed, To disengage, remove this indicator.
Ch	1-99, L, AV1, AV2	Select a channel you want to record.
Date	Specified date (from today to 2 month later) Every Sunday to Saturday, Monday to Thursday, Monday to Friday, Monday to Saturday, everyday.	Select a date of a TV programme you want to record.
Start*	0:00 - 23:59	Enter a starting time of recording. (An initial setting is 10 minutes later.) You can also use the number buttons.
End*	0:00 - 23:59	Enter an end time. (Set the timer to begin recording no sooner than 2 minutes past the current time. Recording must not exceed 8 hours.) You can also use the number buttons.
Media	DVD	When you record on a DVD-RAM/RW/R disc.
	HDD	When you record on the HDD.
Pict.	XP	For recording in the best picture quality, but shorter than "SP" in recording time. (More disc capacity is required.)
	SP	Standard setting of recording time and picture quality.
	LP	For longer recording, but inferior to "SP" in picture quality.
	MN(Manual)	Customized setting of rate (bit rate).
	AT(Auto)	To set a rate automatically according to the remaining volume of the disc. (If the disc does not have room for the TV programme, the programme cannot be recorded to the end.) When you select the HDD, the recorder records for a length of time corresponding to that of a blank DVD-RAM disc (4.7GB). Not applicable to a recording for 2.5 hours or longer.
Pict.	1.0, 1.4, 2.0-9.2	Not applicable when "XP", "SP", "LP" or "AT" is selected. You can set a rate from 1.0, 1.4 and at intervals of 0.2Mbps from 2.0 to 9.2. (The upper limit of the value depends on the "Audio" setting.)
Audio	⊡⊡ D /M1	Standard setting.
	⊡⊡ D /M2	Superior to ⊡⊡ D/M1.Recommended for recording music programmes.
	L-PCM	Uncompressed original digital audio. Equal quality to audio CD, but recordable time will be shorter.

The digital recording technology for consumer products of Dolby Laboratories is used for ⊡⊡ D/M1 and ⊡⊡ D/M2. Dolby Digital 192 kbps is set for ⊡⊡ D/M1 and Dolby Digital 384 kbps for ⊡⊡ D/M2.

Notes
• "Start" and "End" accept time up to 30:59 if you use the number buttons. When you enter a time over 24:00 and press the ENTER button, "Date" will gain one day, and the time will be corrected to 0:00-6:59.
• If you record with setting the bit rate to about 4.0 Mbps or below, the recorded pictures may not be played properly if change the playback speed. There will be noise, and the picture quality is lower than other rate settings.

Programming a recording (REC MENU) (Continued)

Optional settings on REC MENU

The following setting options are available for each timer programme. Follow steps 1) to 3).

1) Select a desired one (① - ⑨) using ▲ / ▼ / ◄ / ►, then press ENTER.
A sub menu (or keyboard) appears.

2) Make the setting.
Refer to the descriptions below.

3) Finally select "Set timer" using ▲ / ▼ / ◄ / ►, then press ENTER.
The settings are saved.

REC MENU Basic						10/23(Su)17:50
Ch	Date	Start	End	Media	Pict.	Audio
1	10/30(Su)	7 00	8 30	HDD	SP 4.6	D/M1

Rec time –h――m/ HDD remaining (excluding above) 51h 24m

① Rec folder — ROOT
② Genre — No genre
③ DVD mode — On(I)

④ Edit title name   Advanced   Cancel   Set timer

To cancel the current timer prrogramme.

Switches by either way.

or

REC MENU Advanced	10/23(Su)17:50
Maximum quality rate and space saving mode	Off
Picture ratio when recording DVD-Video	4:3
Auto chapter division when there is no sound	Off
Chapter division when DVD-Video	Off
PDC	Off

⑤ ⑥ ⑦ ⑧ ⑨

Basic   Set timer

---

① Rec folder

> To select a folder into which the programme is saved.

Available folders appear. Select one from them.

• For the folder function, see ➡ page 50.

② Genre

> To select a genre of the programme.

Available genres appear. Select one from them.

• For genres, see ➡ page 124.

③ DVD mode

> Make this setting when this timer programme is (or will be) onto DVD-R/RW (Video mode).

Off / On(I) / On(II)

See ➡ page 28.

④ Edit title name

> To enter a name of the timer programme.

A keyboard appears.

• For keyboard operation, see ➡ page 128.

⑤ Maximum quality rate and space saving mode

> Use this feature when you want to save space while using the best picture quality rate for recording. This will use 9.2 Mbps for recording and reduce the rate temporarily for the portion where the high rate is not required where picture is fairly constant.

Off: This feature is disabled and the normal recording is performed.

On: This feature is enabled.

Notes
• When the audio quality is set to "L-PCM", the picture quality is set to "MN 8.0 (Mbps)". When the audio quality is set to any other selection, the picture quality is set to "MN 9.2 (Mbps)".
• "On" returns to "Off" if you change "Pict." setting.
• The space used may not change, depending on the picture contents.

⑥ **Picture ratio when recording DVD-Video**

Make this setting when this timer programme is (or will be) onto DVD-R/RW (Video mode).

Video mode cannot record a title which contains both 4:3 pictures and 16:9 pictures.

4:3: Aspect ratio is fixed to 4:3 to record.

16:9: Aspect ratio is fixed to 16:9 to record.

⑦ **Auto chapter division when there is no sound**

This feature automatically creates divisions for chapters when no audio (no audible sound) portion is found.
For example, when you have recorded a programme of music clips, you can use this feature to jump to the beginning of a clip during playback.

Off: This feature is disabled.

On: Division for chapters are created when no audio portion is found.

Notes
- Division for chapters may not be created, depending on the contents of the programme or the condition of no audio portion, or it may be created at different positions. A division for a chapter may be created within a music clip.
- Depending on the specification made for the recording sound level, a division for a chapter may not be created or it may be created at different positions.
- Setting "On" may create chapters, and their number may reach the maximum allowed. At that point, no more chapters can be created. In this case, decrease the chapters, for example, combining chapters.
- This feature is not available on DVD-R/RW discs (Video mode). To create chapters automatically during recording on DVD-R/RW disc (Video mode), set "DVD-Video chp div".

⑧ **Chapter division when DVD-Video**

Make this setting when this timer programme is (or will be) onto DVD-R/RW (Video mode).

This feature creates chapters automatically while recording. Chapters enables skipping play of the recorded disc.

Off: This feature is disabled.

5 min / 10 min / 15 min / 20 min:
Select the interval of chapters.

Notes
- If a number of chapters reaches the maximum, which may vary depending on the disc condition, no more chapters are created.

⑨ **PDC**

To activate the PDC recording feature to record the programme or not.

PDC (Programme Delivery Control System)
Programme PDC is a system of telling the recorder when a programme actually starts. Typically, when you want to record programme you will tell the recorder to start recording, probably, five minutes before the advertized starting time of the programme and to finish ten minutes or so after the programme is due to finish. So even if the programme starts early or finishes late you will normally still get to see what you wanted to record. However when live programme over-run or the day's television schedule is changed from that advertized, you may miss the desired programme which may have been delayed or even cancelled and the recorder will record the programme even if it is two or more hours late. With PDC, you enter the exact start time and the recorder will wait until the signal is sent to confirm the programme is starting and the recorder will record the programme even if it is two or more hours late.

Off: This feature is disabled.

On: This feature is enabled.

Note
- When setting "Ch" to "L", "AV1" or "AV2", this function is not available.

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■ **Changing the default settings of recording quality**

1) While REC MENU Basic (e.g. step 4) is displayed, press QUICK MENU.

2) Press ▲ / ▼ to select "AV record quality", then press ENTER.

3) Follow steps 1 to 3 (⇨ page 122).

REC MENU Basic			10/23(Su)17:50
AV record quality			
Ch D	HDD rec	XP	9.2⊡D/M1	Audio
1 10/3	● DVD rec	SP	4.6⊡D/M1	⊡D/M1
Rec time –			h 24m
	Manual mode set.		
Rec folde	Rate	9.2	
Genre	Audio quality	⊡D/M1	
DVD mod	Total recording time: approx. 61min. (with 4.7 GB unused)		
Edit title name	Advanced	Cancel	Set timer
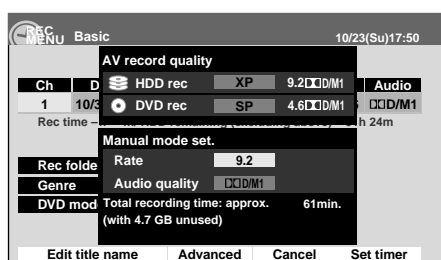
■ **Shifting a time period of a recording (Time Shift)**

If a prior TV programme extends beyond its scheduled time and into one that you programmed, you can shift the programmed start and end time of the recording.
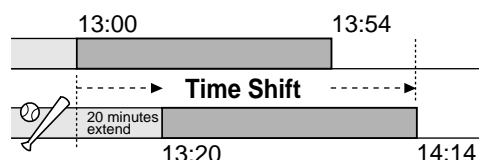
```
        13:00              13:54
         ┌──────────────────┐
         │                  │
- - - - ►   Time Shift   - - - - ►
  20 minutes
  extend   ┌──────────────────┐
         13:20              14:14
```

1) Press MENU.

2) Press ▲ / ▼ to select "Timer recording", then press ENTER.

3) Press ▲ / ▼ to select a timer programme you want to shift the time period.

4) Press EXTEND.

"Start" and "End" are ready to be input.

5) Press EXTEND repeatedly.

Each time you press the button, "Start" and "End" are shifted in 10 minutes intervals up to 60 minutes later.

6) Press ENTER.

7) Press ▼ to select, "Set timer", then press ENTER.

8) Press EXIT to exit.

Note
• After you shifted the time of a timer programme which will be repeatedly daily or weekly, you should restore the original start/end time for future recordings.

■ **Turning the power off automatically after completing a programmed recording**

1) While executing a programmed recording, press QUICK MENU.

2) Press ▲ / ▼ to select "End time", then press ENTER.

3) Press ▲ / ▼ to select the recording end time and power condition after the recording finishes. (◄ / ► to shift the cursor.)

End time:
Set the hour and minute.

Pwr Off:
On: Power will be on also after the recording.
Off: Power will turn off after the recording.

4) Press ENTER.

Notes
• The recording end time cannot be changed in the following cases;
  – within 1 minute before the recording end time.
  – advancing the recording end time.
  – during recording in AT mode.
• Even if you extend the recording end time, the recording will stop when the HDD is filled up. Also at 8 hours from the start time the recording will stop.

■ **Relief recording**

If you set a timer programme to a loaded DVD disc but the disc does not have remaining space to record the programme, the recorder records the whole programme to the HDD instead of the loaded disc.

To use this function, set "Relief recording" (⇨ page 123) to "On".

Notes
• This function works also when you start a recording on a loaded DVD disc by pressing the REC button and the remaining space of the disc is under 10 minutes. (The programme is not recorded on the disc.)
• This feature does not work when the HDD does not have remaining space to record the programme.
• If the recording end time is extended after starting a timer programmed recording, the programme is not recorded onto the HDD. The loaded disc records the programme until it is filled up then stops recording.
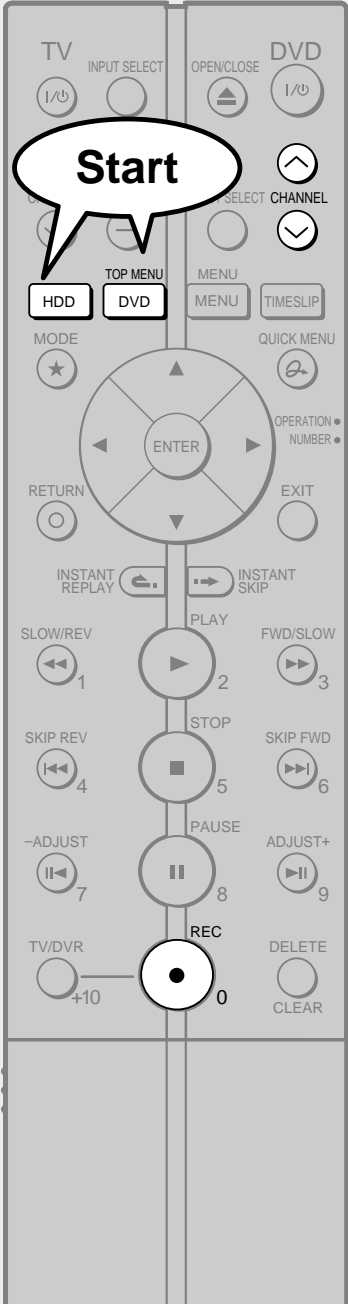
HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

Recording a TV programme

To record a TV programme currently being broadcast, follow the procedures of this chapter.

■ Preparation

- When you record on a DVD-RAM/R/RW disc, load it into the recorder.
  - Load a disc which has sufficient space available to record the programme.
  - Make sure the loaded disc is not write-protected.
- If you record on a DVD-R or a DVD-RW disc, set "DVD compatible mode" (➡ page 28) to "On (Mode I)" or "On (Mode II)". In DVD-R/RW recording, "Off" setting is regarded as "On (Mode I)".
- If you record on a DVD-R or DVD-RW disc, set "Aspect ratio (video mode)" (➡ page 28) according to recording sources.

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Start

1 Press HDD or DVD to select a media to record on.

HDD

TOP MENU
DVD

HDD : To record on the HDD.
DVD : To record on a DVD-RAM/R/RW disc.

CONTENT MENU appears.
Pressing the same button turns it off.

2 Press CHANNEL to select a channel to record.

CHANNEL

The number buttons are also available.
Be sure to set the OPERATION/NUMBER switch to "NUMBER" before using the number buttons.

3 Press REC.

REC

Recording starts.

Recording a TV programme (Continued)

Notes
- The number of titles cannot exceed 99 for a DVD-RAM/RW/R disc or 396 for the HDD.
- One continuous recording cannot exceed in any case 8 hours. Recording automatically stops at 8 hours.
- You cannot start recording immediately before a programmed recording starts.
- During monaural sound recording, the same sound is recorded on both the left and right channels.
- When "Audio" is set to "L-PCM", multi-channel sound is recorded as stereo sound. When playing this recorded sound, you will hear NICAM Mode I and NICAM Mode II sounds simultaneously. Press the AUDIO button to select a desired sound.
- When "DVD compatible mode" is set to "On (Mode I)" or "On (Mode II)", the unit records the same sounds on both the left and right channels when receiving monaural sound. When receiving the NICAM Mode I/Mode II sound, the selected sound, Mode I or Mode II, is recorded on both the left and right channels.
- Depending on the disc condition, pressing the REC button may take a longer time to start recording.
- When a starting time of a programmed recording comes, a recording in execution is stopped and the programmed recording starts. If you do not want to stop the recording, cancel the timer program before it starts.
- Even if you set "Aspect ratio(video mode)" (page 28) to "16:9", images are recorded in 4:3 aspect ratio when using a DVD-R or DVD-RW disc with "Pict." set to "1.0" (Mbps) or "1.4" (Mbps).

■ To stop recording

Press STOP.

■ To pause recording (to omit an unnecessary portion)

During recording, press PAUSE.
To resume recording, press it again.

Note
- While recording onto a DVD disc, pressing PAUSE on the recorder automatically creates a new chapter division at that point.

■ To change a TV channel to be recorded

1) **During recording, press PAUSE.**
   Recording pauses.

2) **Press CHANNEL to change the channel.**

3) **Press PAUSE to resume recording.**

■ To view a TV programme while recording another

1) **Start recording on this recorder.**

2) **Press TV/DVR.**

3) **Using the channel selector of the TV, select a desired channel on the TV.**
   If you press the TV/DVR button again, you will go back to the display that you are recording.

Note
- This function is available only when the TV is connected to the AV1 (TV) socket.

■ To set an end time of a recording which is in progress

1) **During recording, press QUICK MENU.**
   The Quick Menu appears.

2) **Press ▲ / ▼ to select "End time" then press ENTER .**

3) **Press ▲ / ▼ to select the recording end time and power condition after the recording finishes. (◄ / ► to shift the cursor.)**
   End time:
   Set the hour and minute.

   Pwr Off:
   On: Power will be on also after the recording.
   Off: Power will turn off after the recording.

4) **Press ENTER.**

Notes
- By setting an end time, it is memorized as a programmed one, and the ⊘ indicator in the front panel display illuminates to indicate that the recorder holds a timer program of recording.
- The programmed end time must be set for 5 minutes later than the current time.

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Recording an external source

You can record programmes from connected equipment on the HDD or a DVD-RAM/R/RW disc.

Connect according to A or B.
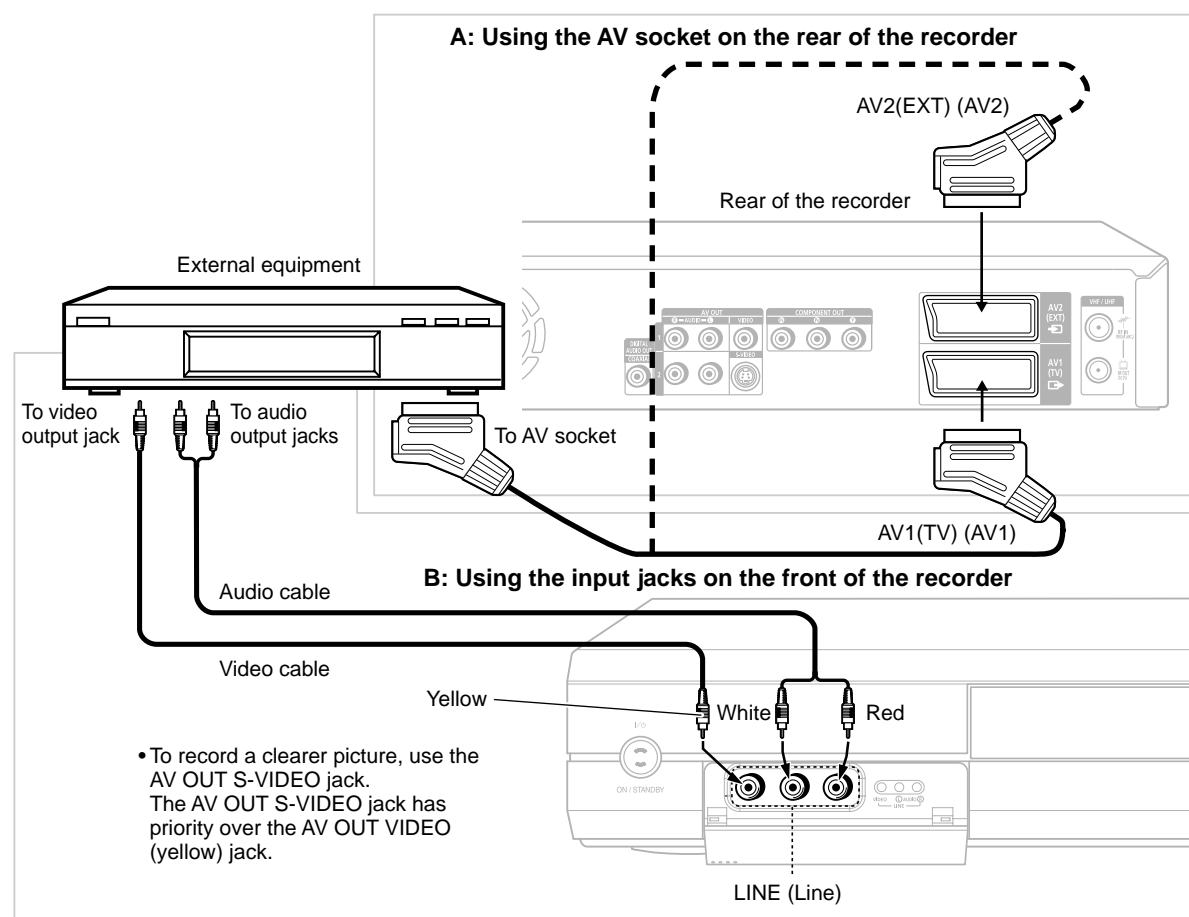
A: Using the AV socket on the rear of the recorder

AV2(EXT) (AV2)

Rear of the recorder

External equipment

To video output jack   To audio output jacks   To AV socket

AV1(TV) (AV1)

B: Using the input jacks on the front of the recorder

Audio cable

Video cable

Yellow   White   Red

• To record a clearer picture, use the AV OUT S-VIDEO jack. The AV OUT S-VIDEO jack has priority over the AV OUT VIDEO (yellow) jack.

LINE (Line)

■ Preparation
• When you record on a DVD-RAM/R/RW disc, load it into the recorder.
   – Load a disc which has sufficient remaining space to record the programme.
   – Make sure the loaded disc is not write-protected.

Notes
• If a source of high quality sound track such as DVD audio is recorded with this recorder, the sound quality becomes regular audio CD quality. Refer to the instructions of the connected equipment.
• When you record an external source onto a DVD-R/RW disc (Video mode) or the contents which will be copied to a DVD-R/RW disc (Video mode) later on, set the connected equipment to output sound you want to record (if selectable such as multiplex broadcasting), as the recorder records sounds of external source in stereo onto a DVD-R/RW disc, ignoring the setting of "DVD compatible mode" (page 28).
• DVD-R/RW discs (Video mode) cannot record contents with copy restriction signal embedded (copy-protected or copy once contents), the HDD, DVD-RAM disc, CPRM compatible DVD-R/RW (VR mode) can record copy once contents.
• Some satellite programmes via a connected tuner may contain both 4:3 pictures and 16:9 pictures. DVD-R/RW discs (Video mode) cannot record such contents, under restriction of the DVD-Video standard. To record these programmes, use the HDD or DVD-RAM discs.

(Continued)
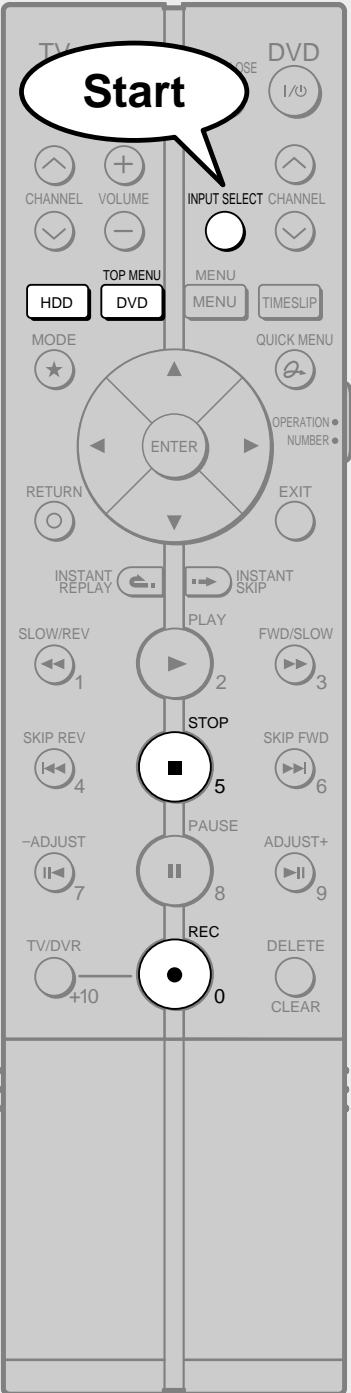
Recording an external source (Continued)

Start

1 **Press INPUT SELECT repeatedly so that "LINE", "AV1" or "AV2" appears on the front panel display, corresponding to the input in which the device is connected.**

Each time you press the button, the indicator changes.

LINE: To record pictures from equipment connected to the LINE jacks on the front panel.

AV1: To record pictures from equipment connected to the AV1(TV) socket on the rear panel.

AV2: To record pictures from equipment connected to the AV2(EXT) socket on the rear panel.

2 **Press HDD or DVD to select a recording media.**

HDD : To record on the HDD.
DVD : To record on a DVD-RAM/R/RW disc.

3 **Press REC of this recorder to start recording.**

4 **Start playback of the source content on the connected equipment.**

5 **When recording is completed, press STOP.**

■ **Notes on recording from a connected VTR or camcorder**

● **Check the condition of the source equipment before playing.**
Set the equipment in good condition, e.g. clean the head or adjust the tracking, etc. to obtain optimum playback. Bad conditions may produce noises in playback. These noises may be detected as copy protection signals, resulting in stop of recording on this recorder.
Play a source in an usual mode. Avoid using any correcting or enhancing features, as they may add signals which can be detected as copy protection signals.
Source quality or tape condition beyond adjustments on the source equipment may stop a recording on this recorder.

● **Do not operate the source equipment during recording on this recorder.**
Operations such as pausing, resuming, fast-forwarding (CUE) and fast-reversing (REVIEW), etc. may produce noises, which may be detected as copy protection signals. Therefore, first start playback on the source equipment to confirm that the desired source can be played properly, and then start recording on this recorder. Do not operate the source equipment during recording. After completing the desired scene, stop the recording on the recorder, and then stop the playback on the source equipment. Delete unnecessary scenes using editing functions (). If you want to operate the source equipment during recording, pause or stop the recording. After operating the source equipment, resume the recording as above.

● **When recording from a camcorder**
Follow the above notes. Be sure to power the camcorder by its AC adapter, not batteries. If batteries are used, the recording may be finished on the way.

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |
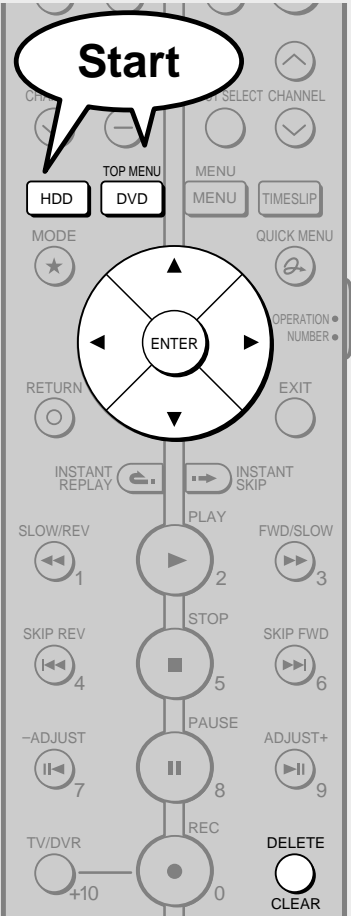
Deleting recorded contents
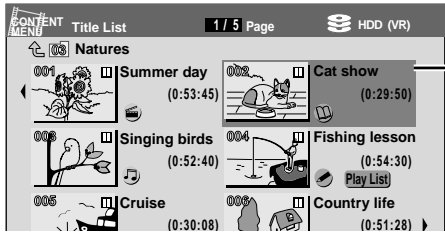
Important note

Any deleted title/chapter (original) cannot be restored. Before deleting, be sure to check contents on the disc.

On a finalized DVD-R/RW disc, this feature is not possible.

To delete a title (chapter)

Start

1 **Press HDD or DVD, then press ▲ / ▼ / ◄ / ► to select a title to delete.**

To display chapters, press the MODE button.

e.g.

| CONTENT MENU | Title List | 1 / 5 Page | HDD (VR) |

Natures

001	Summer day (0:53:45)	002	Cat show (0:29:50)
003	Singing birds (0:52:40)	004	Fishing lesson (0:54:30) Play List
005	Cruise (0:30:08)	006	Country life (0:51:28)

Select a title to delete pressing ▲ / ▼.

2 **Press DELETE.**

Alternate method:
Press the QUICK MENU button, then press the ▲ / ▼ buttons to select "Title delete" ("Chapter delete") and press the ENTER button.

3 **Read the message and press ◄ / ► to select "Yes," then press ENTER.**

Deleting multiple specified parts

1) **During play or stop, press MENU.**

2) **Press ▲ / ▼ to select "Edit programme", then press ENTER.**

3) **Press HDD or DVD to select a disc that contains titles or chapters you want to delete.**

4) **Press ▲ / ▼ to select "Del rec. programme", then press ENTER.**
"EDIT MENU Del Selected items" appears.

5) **Select a part (a title or chapter) to delete.**
(To select a part, see)

6) **Press ▼ repeatedly to select "Start", then press ENTER.**

7) **Read the message and press ◄ / ► to select "Yes", then press ENTER.**
The recorder begins the deletion process.
To cancel deleting, press the ◄ / ► buttons to select "No", then press the ENTER button.

Notes
• On a DVD-RW disc, only the last title recorded can restore the disc capacity by being deleted.
• On a DVD-R disc, deleting cannot restore the disc capacity.

Others

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To protect recorded content

You can protect recorded content from unexpected deletion.
Protection is provided for each title (original).

1) Perform steps 1 and 2 in "Playing recorded contents (CONTENT MENU)" (▷ page 46) to select a title.

2) Press the QUICK MENU button, and press the ▲ / ▼ buttons to select "Title information". Then press the ENTER button.

3) Press the QUICK MENU button, and press the ▲ / ▼ buttons to select "Lock" and then press the ENTER button.
The mark 🔒 appears.

Notes
- To cancel protection, repeat this procedure. At step 3), select "Unlock".
- Disc initialization erases all titles on a disc even if they are protected.
- Executing "All HDD titles delete" (▷ page 124) erases all titles on the HDD even if they are protected.

Technical information

● **About recording time**

The recording time of a typical VCR (Video Cassette Recorder) is determined by the length of a video tape and recording speed (SP, LP, etc.). Video tapes with various recording times are available in the market.
On the other hand, the recording time of a DVD-RAM/R/RW depends on the bit rate (Mbps: amount of data transmitted per second), which can be varied in MPEG2 (Moving Picture Experts Group2) compression technology.
As an example, when you pour water into a bucket from a faucet, the faster the water flows, the sooner the bucket is filled with water. On the other hand, the slower the water flows, the more slowly the bucket is filled. The DVD-RAM/R/RW is, so to speak, such a bucket, and the degree you turn the faucet is bit rate, the time required to fill the bucket with water is the recording time available for a disc. The higher you set the bit rate (making much more water flow), the sooner a disc is filled. Consequently, the recording time becomes shorter. The lower you set the bit rate, the longer time it takes to fill a disc.

● **About picture quality (XP, SP, LP, AT (Auto), MN (Manual) mode)**

The higher you set the bit rate, the more the volume of information for the picture. The lower the bit rate, the less the volume of picture information.

However a high bit rate does not always mean that the picture quality is high. The difference between the 1.4 Mbps and 9.2 Mbps is obvious, but when comparing similar bit rates, the difference may be insignificant. Generally when you set the bit rate low for longer recording time, the data volume shortage will result in a lack of detail information. As a result, the picture quality is decreased (more noticeable with dynamically moving images). For example, square noises (block noise) may occur in a scene with fast action or a scene with light and shadows, such as a water surface.
This recorder has several settings, for example 2 hour recording at "SP" mode or 4 hour recording at "LP" mode (both assume a blank 4.7 GB DVD-RAM). It is recommended to consider the "SP" mode as a standard mode and use the "LP" mode when you want to record for long time regardless of the picture quality. If you want to record for about 2 hours or are uncertain which one to select, select the "AT" mode.
On a blank 4.7 GB DVD-RAM disc, the "AT" mode automatically sets the appropriate bit rate corresponded to the recording time from about 1 hour to up to 2 and a half hours so that you can achieve the best picture quality. If a part of a DVD-RAM disc has already been recorded, the "AT" mode sets the bit rate suitable for the remaining space on the disc. (The picture quality is determined referring the remaining space just before recording. When the remaining space is scarce in the disc, the picture quality may decrease from what you set beforehand or the recording may stop halfway.) "AT" mode is available also on DVD-R/RW recordings.
When you want to record a music program or animation with high picture quality, it is recommended that you select the "MN" mode. If you select more than 6 Mbps, you can usually record with considerably higher picture quality. However the higher you set the bit rate, the shorter the recording time.

● **▢▢ D /M1, ▢▢ D /M2**

Sound recording format onto DVD-RAM discs. When recording, sounds are converted into digital signals and compressed. In playback, they are extracted to the original sound. The standard differenciates ▢▢ D /M1 and ▢▢ D /M2 in data volume to use. ▢▢ D /M1 and ▢▢ D /M2 are applied the digital recording technology for consumer products of Dolby Laboratories. Dolby Digital 192 kbps is set for ▢▢ D /M1 and Dolby Digital 384 kbps for ▢▢ D /M2.

● **L-PCM (Linear PCM)**

Sound recording format, like Dolby Digital. However, sounds are converted into digital signals and recorded as they are without compression. This process requires more data than Dolby Digital.

Playback
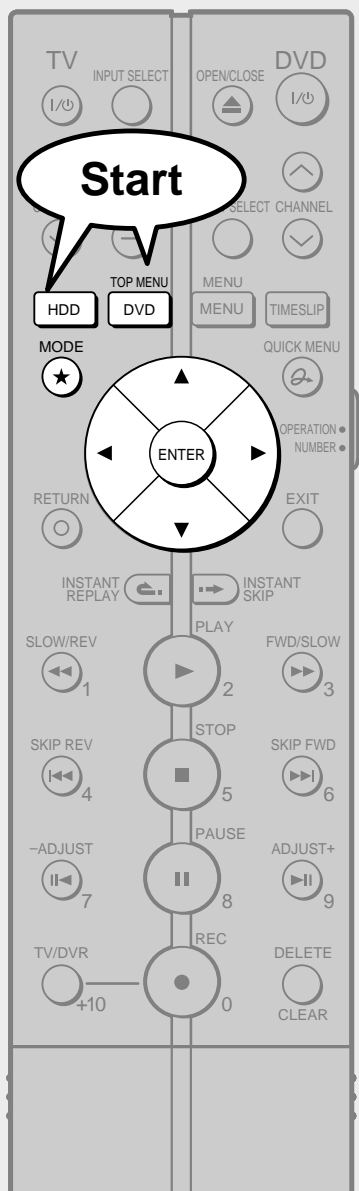
Play your favorite contents.

● **Playing recorded contents (CONTENT MENU)**

● **Folder function**

● **Playing a DVD video disc**

● **Other playback functions**

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Playing recorded contents (CONTENT MENU)

Titles and chapters recorded on the HDD or a DVD-RAM/R/RW disc are displayed in thumbnail view, so that you can easily locate a desired one.

1 Press HDD or DVD to select the drive.
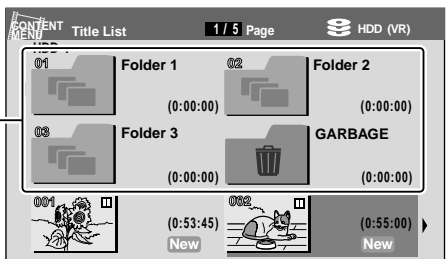
HDD: Contents in the HDD
DVD: Contents in a loaded disc

(Contents recorded on other devices or those in a finalized DVD-R/RW are not displayed.)
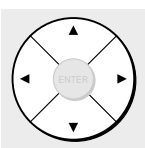
The "CONTENT MENU Title List" appears.

e.g.

See "Folder function" (⇨ page 50)

| CONTENT MENU Title List | 1 / 5 Page | HDD (VR) |

01 Folder 1 (0:00:00)	02 Folder 2 (0:00:00)
03 Folder 3 (0:00:00)	GARBAGE (0:00:00)
001 (0:53:45) New	002 (0:55:00) New

2 Press ▲ / ▼ / ◄ / ► to select a title (chapter).
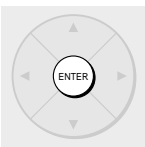
You can view succeeding or prior pages by pressing the SKIP REV (I◄◄) or SKIP FWD (►►I) button.
To select a chapter, select a title and press the MODE button.
The Chapter List appears.
By pressing the MODE button again, you can return to the Title List.

3 Press ENTER.

Playback starts from a selected title (chapter).

Notes
- In a CONTENT MENU, titles (Original) precede titles (Playlist), in order from the oldest one respectively.
- To turn off the CONTENT MENU, press the EXIT button. Absence of operations for longer than about 15 minutes also turns off the CONTENT MENU.
- The mark ‖ is displayed in every thumbnail when "HDD/RAM title play" (⇨ page 121) is set to "Title resume". When set to "Serial playback", it is displayed in a thumbnail last operated.
- You can change a thumbnail picture. See ⇨ page 106.
- You cannot display the CONTENT MENU for DVD-R/RW discs recorded on other devices.
- For playing a recorded title while recording another, see ⇨ page 49.
- A black thumbnail with "Recording" means that the title is being recorded or its recording will start within 15 seconds. This thumbnail cannot start playback.

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■ Reading CONTENT MENU

> Each recorded content is displayed as its thumbnail.
> Each time you press the ZOOM button in the lid,
> you can switch displays between title thumbnail and
> title list.

CONTENT MENU	Title List	**1 / 5** Page	🥞 HDD (VR)

HDD :

001	**Summer day** (0:53:45)	002	**Cat show** (0:29:50)
003	**Singing birds** (0:52:40)	004	**Fishing lesson** Play List
007	**Cruise** (0:30:08)	008	**Country life** (0:51:28) ▶
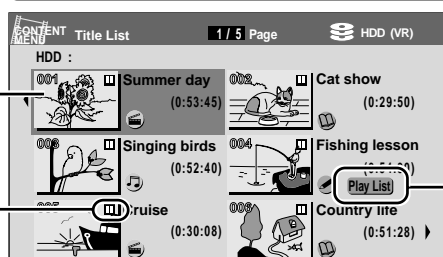
> A fictitious title created by editing is
> marked with "Playlist".

> This shows that the recorder memorizes the location
> you last stopped playback in each title.
> To use this function, set "HDD/RAM title play" to
> "Title resume". (➡ page 121)
> You can make the recorder memorize only the very
> last point, regardless of the number of titles.
> Set "HDD/RAM title play" to "Serial playback". (➡ page 121)

> Titles (Original) precede titles (Playlist) in order from
> the oldest one.

■ To stop playback

Press STOP.

STOP
■ 5

■ To pause playback (still playback)

Press PAUSE.

PAUSE
❚❚ 8

To resume normal playback, press the PLAY button or
the PAUSE button.

Note
• Sound is muted in still mode.

■ To skip by 1/20 of whole

During playback, press ◄ / ►.
Each time you press the button, you can skip by 1/20
of the current title or track if it is longer than 1 minute.

■ To skip the contents in pre-determined increments

During playback, press INSTANT SKIP.
Each time you press the button, you can skip by a
specified time.
You can select the interval per press of the button.
See "Instant skip interval" (➡ page 121).

■ To skip back in pre-determined increments

During playback, press INSTANT REPLAY.
Each time you press the button, you can go back by
the specified time to resume playback.
You can select the interval per press of the button.
See "Instant replay interval" (➡ page 121).

Notes
• This operation may not work for some discs.
• Depending on the structure of a disc, some operations may
be limited.
• Depending on playback conditions, some operations may
not work.

■ Erasing content

1) **At step 2 on ➡ page 46, select an unnecessary title (chapter).**

2) **Press DELETE.**
   • A message appears. Select "Yes", then press
   ENTER. The content will be deleted.

Note
• While selecting an unnecessary title (chapter), you can
delete by selecting "Title delete" or "Chapter delete" from
the "Quick Menu".

■ Resuming playback from the location last stopped (Title resume)

The recorder memorizes the location you last stopped playback to resume from there.

To use this function, set "HDD/RAM title play" (page 121) to "**Title resume.**" The recorder will memorize the location you last stopped at in each title, so you can resume playback from there. For example, if there are 6 titles, you can start each of them as if you had stored 6 video tapes in the recorder.

- **To return to the beginning of the title**
  During playback, press QUICK MENU button, then press ▲ / ▼ buttons to select "Restart title," then press ENTER button.

- **To play another title**
  Press the HDD or DVD button to display "CONTENT MENU Title List," then select a title.

You can make the recorder memorize only the very last point, regardless of the number of titles. Set "HDD/RAM title play" (page 121) to "**Serial playback.**"
- **To return to the beginning of the title**
  Press SKIP REV (I◄◄) button repeatedly until the beginning of the title appears.
- **To play the other title**
  Press SKIP REV (I◄◄) or SKIP FWD (►►I) button repeatedly.

Notes
- Depending on conditions or contents, playback may not start from the location last stopped at, but instead another location. For example, from the beginning of the disc or title.
- Depending on the disc, there may be a slight difference between the location the recorder memorized and the actual location where playback starts.
- This function is not available on DVD-R/RW discs.
- The resuming function will not work if the write-protect tab is set to "PROTECT" (page 7).

■ To play a recorded title while recording another on the same disc (Recorded Title Play)

During recording, you can play a title recorded on the same disc.

1) **While recording, press HDD or DVD.**

2) **Press ▲ / ▼ / ◄ / ► to select a desired title, then press the ENTER.**
   Playback of the selected title starts.

   Pressing the STOP button stops playback, and the content currently recorded returns. If you press the PLAY button, playback resumes from the location you last stopped.

Notes
- The playback picture may appear after a delay of several seconds.
- While you are using this function, the following operations/ functions are not available.
  - Programmed playback (repeat playback, etc.)
  - Editing (Playlist programming, dubbing, title/chapter naming, etc.)

■ Playing all titles (original/playlist) in a disc

Set "HDD/RAM title play" (page 121) to "Serial playback". You can play all titles in the HDD and DVD-RAM disc in the order of the thumbnails on CONTENT MENU, as if they were recorded in one video tape.

■ Checking the background information on a selected title

1) **At step 2 on page 46, select a title (chapter) then press QUICK MENU.**
   The Quick Menu appears.

2) **Press ▲ / ▼ to select "Title information", then press ENTER.**
   Detailed information of a selected title (chapter) appears. You can switch the chapters in the title by pressing the SKIP REV (I◄◄) or SKIP FWD (►►I) buttons.

Notes
- From the Quick Menu on the "CONTENT MENU Title Information", you can change the details such as name, genre or time.
- You can protect the title from unexpected erasure (page 43).
- To return to the previous display, press the RETURN button.

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

Folder function

You can create folders and put increasing recording titles into them to arrange.

Start
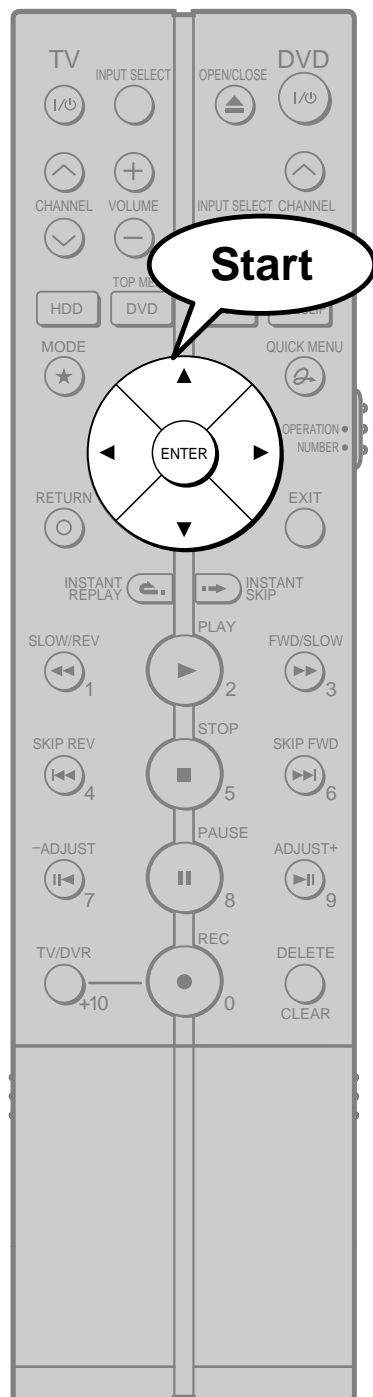
- Each folder can be named such as serial drama, sports, movie or user name.
- Contents in the folder can be protected so that it cannot be operated by others. ("LOCK")
- You can put titles you want to delete into "GARBAGE" so that you can delete them collectively later.

The following folders are beforehand prepared in the HDD.

"Folder 1", "Folder 2", "Folder 3"
"LOCK" (Invisible at factory set)
"GARBAGE"

You can add folders if needed.
You can create new folders also in a DVD-RAM or DVD-R/RW (VR mode).
("Creating folders",)

"Title List" on which "GARBAGE" is placed is called ROOT.

To open the folder, press ▲ / ▼ / ◄ / ► to select the folder, then press ENTER.

To go back to the ROOT, press ▲ / ▼ / ◄ / ► to select this icon, then press ENTER.
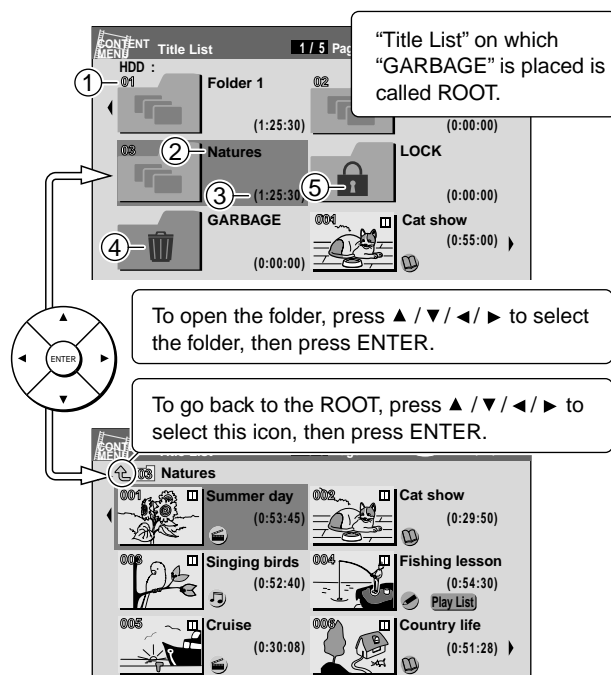
① **Folder number**
Folders are displayed in order from the smallest number.
You can change the order.

② **Folder name**
You can change the name. (Depending on condition, it may not work.)

③ **Total time of the recorded titles (Original) in a folder**

④ **"GARBAGE"**

⑤ **"LOCK" (To use this function, you need to select "On" in advance** **)**
You can protect recorded titles.
This function is available only for the HDD.

Creating folders

HDD **DVD-RAM** **DVD-RW (VR)** DVD-RW (Video) **DVD-R (VR)** DVD-R (Video)
DVD-VIDEO VCD CD

The recorder provides 3 folders ("Folder 1", "Folder 2", "Folder 3") for recorded titles.
Including these, a maximum of 24 folders can be created.
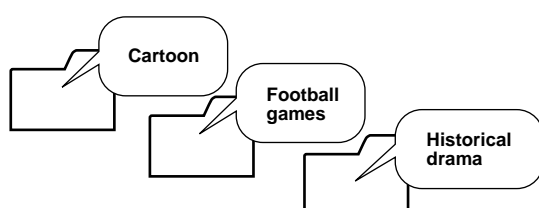
1) Press HDD or DVD to select the drive.
HDD: Contents in the HDD
DVD: Contents in a loaded disc

2) Press QUICK MENU.

3) Press ▲ / ▼ to select "Folder function", then press ENTER.
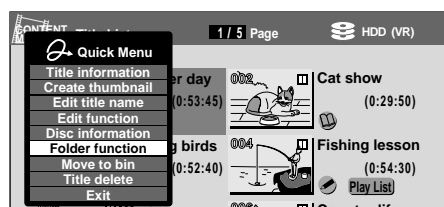
4) Press ▲ / ▼ to select "Folder settings", then press ENTER.
"Folder settings" menu appears.

5) Press ▲ / ▼ / ◄ / ► to select an untitled folder then press ENTER.
A keyboard appears.

6) Enter a folder name.
A maximum of 48 letters can be inputted.
A name which contains the following words cannot be set;

root, garbage, lock, no specification

7) When finished, press MODE.
"Folder settings" menu returns. A new folder with the name is created.

Notes
- You cannot create a folder in a folder.
- When programming a timer recording, you can set a created folder for the title to be recorded. (page 34)
- When you copy content in a folder from a loaded disc to the HDD, they are copied on the ROOT. However, if you create a folder of the same name in the HDD then execute copying, the copied contents will be put in the folder of the same name. When copying from DVD-RAM or DVD-R/RW (VR mode) to the HDD, the folder of the same name is created automatically.)
- A DVD-RAM or DVD-R/RW (VR mode) which contains folders created on this recorder may lose the folder assortment or the titles may move onto the ROOT, if it is used on other players (including TOSHIBA products) or PC, etc.

■ To change the folder name

1) After step 1) of "Creating folders", press ▲ / ▼ / ◄ / ► to select the folder to change its name, then press QUICK MENU.

2) Press ▲ / ▼ to select "Folder function", then press ENTER.

3) Press ▲ / ▼ to select "Rename folder", then press ENTER.

4) Repeat steps 6) to 7) of "Creating folders".

Note
- If you change the name of a folder you set for a recorded titles of timer recording, the name in "Rec folder" on REC MENU changes automatically.

Folder function (Continued)

Moving into "GARBAGE"

You can put recorded titles you want to delete into
"GARBAGE" so that they are deleted collectively later.
The titles are not deleted automatically even though you
put into "GARBAGE". The titles can be moved or played
unless "GARBAGE" is emptied.
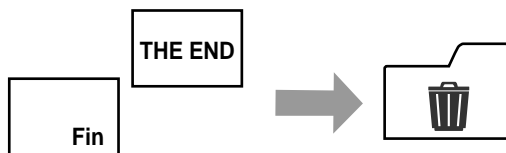
THE END

Fin

You cannot move the following contents;
• A chapter only
• A title which is being recorded
• A protected title
• A title in "LOCK" which is locked (page 55)

1) **Press HDD.**

2) **Press ▲ / ▼ / ◄ / ► to select a title you want to put into "GARBAGE".**

3) **Press QUICK MENU.**

4) **Press ▲ / ▼ to select "Move to bin", then press ENTER.**

5) **Press ◄ / ► to select "Yes", then press ENTER.**
To cancel, select "No", then press ENTER.

The lid of "GARBAGE" opens when a title is put in.

Emptying "GARBAGE"

Titles in "GARBAGE" can be deleted collectively.
Once you execute the deleting process, it cannot be
cancelled.

You cannot execute in the following situations;
• While preparing for a timer recording
• While recording a programme

1) **Press HDD.**

2) **Press ▲ / ▼ / ◄ / ► to select "GARBAGE".**

3) **Press QUICK MENU.**

4) **Press ▲ / ▼ to select "Empty bin", then press ENTER.**
"Empty bin" is not displayed when "GARBAGE" is
empty.

5) **Press ◄ / ► to select "Yes", then press ENTER.**
To cancel, select "No", then press ENTER.

Note
• Even though parts of a Playlist are in "GARBAGE", the
Playlist can be played. However, if you empty "GARBAGE",
the parts are deleted from the Playlist.

Moving a recorded title into a folder
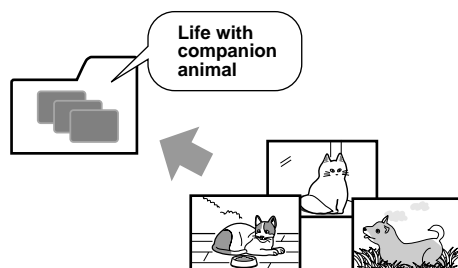
Life with companion animal

You cannot move the following contents;
- A chapter only
- A title which is being recorded
- A protected title
- A title in "LOCK" which is locked (⇨ page 55)

1) **Press HDD or DVD to select the drive.**
   HDD: Contents in the HDD
   DVD: Contents in a loaded disc

2) **Press ▲ / ▼ / ◄ / ► to select a title you want to move into a folder.**

3) **Press QUICK MENU.**

4) **Press ▲ / ▼ to select "Folder function", then press ENTER.**

5) **Press ▲ / ▼ to select "Move to folder", then press ENTER.**

6) **Press ▲ / ▼ / ◄ / ► to select a folder in which you want to move the title, then press ENTER.**
   e.g. Moving into "Comedy"
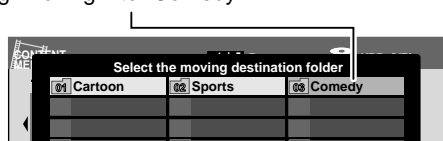
"LOCK":
Unless you input the security code, the title cannot be played.
Make the setting in advance. See ⇨ page 55.

"GARBAGE":
Select if you want to delete titles later. If you select "Move to bin" at step 5), the title is moved into "GARBAGE". (Available only in the HDD.)

■ **Deleting out from a folder**

1) **Select a title which you want to take out.**

2) **Press QUICK MENU.**

3) **Press ▲ / ▼ to select "Folder function", then press ENTER.**

4) **Press ▲ / ▼ to select "Move to folder", then press ENTER.**

5) **Press ▲ / ▼ / ◄ / ► to select " ", then press ENTER.**

■ **Moving multiple titles into a folder**

1) **While displaying a Title List, press QUICK MENU.**

2) **Press ▲ / ▼ to select "Folder function", then press ENTER.**

3) **Press ▲ / ▼ to select "Move multiple to folder", then press ENTER.**

4) **Press ▲ / ▼ / ◄ / ► to select a title you want to move, then press ENTER.**

5) **Press ◄ / ► to select a folder in which you want to move the title, then press ENTER.**
   An icon with the folder number appears.

   e.g. When set to be moved to folder 03

   To cancel the title, press the QUICK MENU button while selecting the title, then select "Cancel Selected Title", and press ENTER.

6) **Repeat steps 4) to 5) to select a title and a folder.**

7) **Press ▼ to select "Start", then press ENTER.**

8) **Press ◄ / ► to select "Yes", then press ENTER.**

Folder function (Continued)

Changing the order of the folders

Folders are displayed in order from the smallest number. You can change the display position by swapping the folder numbers.
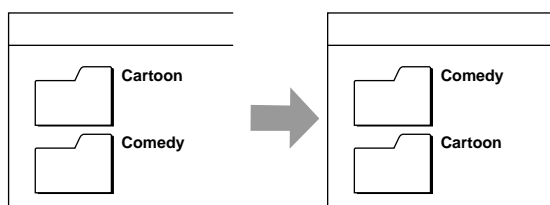
You cannot change the position of the following folders;
• "LOCK"
• "GARBAGE"
• Folders which contain a protected title (Cancel the protection)

1) **Press HDD or DVD to select the drive.**
   HDD: Contents in the HDD
   DVD: Contents in a loaded disc

2) **Press ▲ / ▼ / ◄ / ► to select a folder you want to move.**
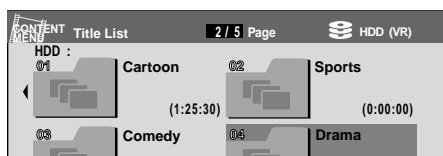
e.g. Swapping "04 Drama" and "02 Sports"

3) **Press QUICK MENU.**

4) **Press ▲ / ▼ to select "Folder function", then press ENTER.**

5) **Press ▲ / ▼ to select "Change folder order", then press ENTER.**

6) **Press ▲ / ▼ / ◄ / ► to select another folder you want to replace, then press ENTER.**

   e.g. Selecting "02 Sports"
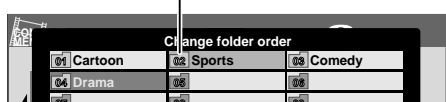
7) **Press ◄ / ► to select "Yes", then press ENTER.**
   To cancel, select "No", then press ENTER.

Removing the folder

Unnecessary folders can be removed.
If a folder is removed, it will disappear and all the titles in it will move onto the ROOT.
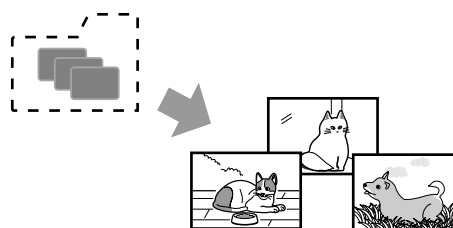
You cannot remove the following folders;
• "LOCK"
• "GARBAGE"
• Folders which contain a protected title (Cancel the protection)

1) **Press HDD or DVD to select the drive.**
   HDD: Contents in the HDD
   DVD: Contents in a loaded disc

2) **Press ▲ / ▼ / ◄ / ► to select a folder you want to remove, then press QUICK MENU.**

3) **Press ▲ / ▼ to select "Folder function", then press ENTER.**

4) **Press ▲ / ▼ to select "Remove folder", then press ENTER.**

5) **Press ◄ / ► to select "Yes", then press ENTER.**
   To cancel, select "No", then press ENTER.

Note
• It you remove a folder which was designated as a recording folder, all the titles will be displayed on the ROOT.

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Using "LOCK"   `HDD`

"LOCK" is the function to protect the titles. The titles in "LOCK" cannot be deleted or played by others who do not know the security code.

"LOCK" is the only folder as well as "GARBAGE". You cannot duplicate or rename it either.

To use this function, you need to select "On" in the following setting in advance.

■ Setting of "LOCK"

1) During stop, press SETUP. (Open the lid of the remote control.)

2) Press ◄ / ► to select "Management settings", then press ENTER.

3) Press ▲ / ▼ to select "Security folder setting", then press ENTER.

4) Press ▲ / ▼ to select, then press ENTER.
Off:
Deactivates this function.

On "show":
Activates this function.
"LOCK" is displayed on the ROOT. You need to input the security code to play the title.

On "hide":
Activates this function. "LOCK" is not displayed on the ROOT. The operations such as playback or deletion cannot be performed.

5) Input the four-digit security code by pressing number buttons, then press ENTER.
To input digits, set the OPERATION/NUMBER switch to "NUMBER".

If you inputted wrong number, press the CLEAR button to input again before pressing the ENTER button.

If you forget the security code or you want to cancel it, press the STOP button 4 times, then press the ENTER button.

Notes
• It you change the setting from "On (show)" or "On (hide)" to "Off", all the titles which are in "LOCK" will move onto the ROOT.
• Even though parts of a Playlist are in "LOCK", the Playlist can be played.

■ Operating "LOCK"
"LOCK" changes its status as follows;

Locked:
You can open this folder.
To play the title, you need to input the security code (or open the Quick Menu while selecting this folder, and select "Folder function" then "Unlock security folder".

Unlocked:
You can open this folder.
You can select and play (same as normal folders).

To lock the folder:
1) While selecting "LOCK", press QUICK MENU.
2) Press ▲ / ▼ to select "Folder function", then press ENTER.
3) Press ▲ / ▼ to select "Lock security folder", then press ENTER.
The icon changes to the locked form.

Note
• Turning on the recorder locks the unlocked folder.

Invisible:
The folder is not displayed. Selecting a title is impossible, therefore operation is unavailable.
Input important titles into "LOCK", and set to "On (hide)". The titles are protected from operations by others.

Notes
• All titles in "LOCK" will be deleted automatically by executing "All HDD titles delete".
• If you execute "All HDD titles delete", the security code will be cancelled.

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |
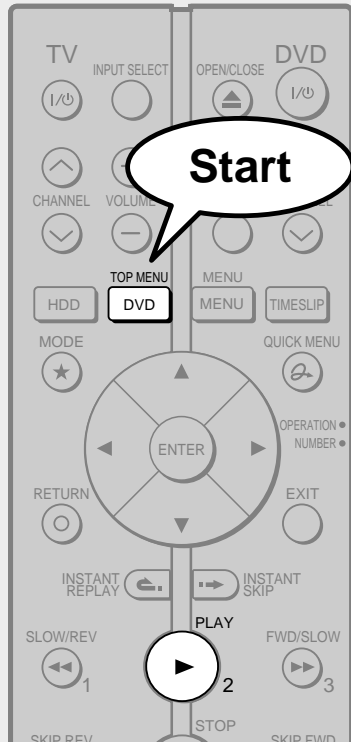
Playing a DVD video disc

You can also play VIDEO CDs, audio CDs or finalization processed DVD-R/RW discs (Video mode) in the same manner.

To play recorded contents, follow the instructions on ➡ page 46.

■ **Preparation**

- Turn on a TV or audio system and select the corresponding input source that the recorder is connected to.
- Load a disc you want to play. (➡ page 20)

1 Press DVD.

The DVD indicator on the front panel illuminates.
This status indicates that the recorder is ready to play a disc in the disc tray (DVD mode).

2 Press PLAY.

Playback starts.
- Depending on the disc, playback starts automatically by loading the disc.
- The recorder may take a short time to start playback. This occurs because the recorder is reading the data of a disc.

Note
- DVD video disc provides high resolution pictures and a lot of information. Because of this, you may notice some fine picture noises on TV screen, which you have never seen with regular broadcast TV programme. While the amount of noise depends on the TV you use with the recorder, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

Locating a title using the top menu

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Some DVD video discs may include a top menu, on which you can view the structure of contents or select a scene. Most of the top menus automatically appear in certain scenes, and also are displayed on demand. Actual operation of the top menu depends on the disc. This section explains a general example of how to operate a top menu. Also refer to the instructions of the disc itself.

1) Press DVD.

2) Press ▲ / ▼ / ◄ / ► to select the title you want.

If the titles in the top menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.

3) Press ENTER.

Notes
- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the top menu during playback and press the DVD button again without selecting any title, the recorder may resume playback from the point where you first pressed the DVD button. (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a top menu.
- Instruction notes of discs may refer to the button that displays the top menu as the TITLE button.
- Depending on the disc, the menu is displayed by the MENU button instead of the DVD button.

■ **Selecting the sound**

If a disc contains several languages, you can select a preferred language from them to hear.

1) During playback, press AUDIO in the lid.

Each time you press the button, output sound changes.

■ **Selecting Subtitles**

You can display subtitles on the TV screen and select a subtitle language from those included on the disc.

1) Press SUBTITLE in the lid during playback.

The current subtitle setting appears.

e.g.

Subtitle	1 --
Status	Off

Setting number and language
The language code appears instead of the language name. Refer to the list of languages and their abbreviations. (➡ page 135)
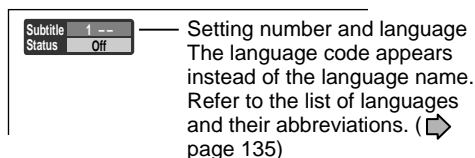
2) Press ▼ to select "Status," then press SUBTITLE to select "On."

Skip to step 3 if "On" is already displayed.

3) Press ▲ to select "Subtitle," then press SUBTITLE to select a language.

The subtitles of recorded languages appear.

The display turns off after about 3 seconds if you do not make a selection.

• **To turn the subtitles on or off**

At step 2, select "Off" by pressing the SUBTITLE button.

Notes
• Some DVD video discs are set to display subtitles automatically.
• Depending on the scene, subtitles may not appear immediately after you set the subtitle function to on.
• Some DVD video discs will allow you to change subtitle languages and turn subtitles on or off only via the disc menu.

■ **Selecting the camera angle**

If the scene was recorded with multiple angles, you can easily change the camera angle of the scene you are watching.

1) Press ANGLE in the lid while playing a scene recorded with multiple angles.

While playing a scene recorded with multiple angles, the angle icon appears on the TV screen. Press the ANGLE button while the angle icon is displayed.

e.g.

Angle 1 / 6	

Total number of angles

Current selection
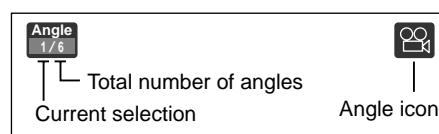
Angle icon

2) Press ANGLE while the angle number is displayed on the TV screen.

You can also select the camera angle by pressing the ANGLE button several times.

• The angle icon disappears after about 3 seconds if no further selections are made.

Notes
• You can also change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
• If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.
• Depending on a disc, the camera angle may not change even though the angle number changes.

■ **Resuming playback from the location last stopped (Resume Play)**

You can resume playback from the location where you stopped.

If you press the PLAY button after stopping playback, playback resumes from the location you have stopped. If you stop playback by pressing the STOP button twice, the resume playback feature will be cancelled.

Notes
• Resume feature cannot function when:
– you select a disc menu language (➡ page 115) or change the parental lock setting (➡ page 116).
– you play a PBC-featured VIDEO CD.
– you open the disc tray.
– you cancel the DVD-Video finalizing process of a DVD-RW disc.
• There may be a difference in the location where playback resumes depending on the disc.
• While the recorder retains a location in memory, initial setting changes with GUI may function only after the memory is cleared.

Other playback functions

Start
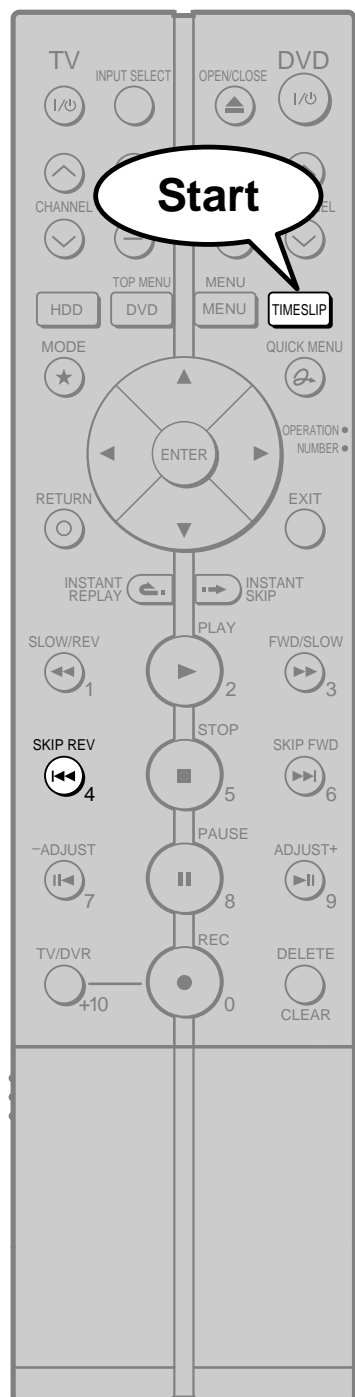
Playing a TV programme currently being recorded (Chase Play)

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

You can begin playback from the beginning of a programme currently being recorded.
You will find this function of great advantage on long programmes, as you do not have to wait for the end of recording to begin playback.

1) **While recording a TV programme on the HDD or a DVD-RAM disc, press TIMESLIP.**

   The recorder displays a TV program as it is being recorded.

2) **Go back to the beginning of the TV program using SKIP REV.**

   When you go back to the beginning, playback starts automatically.

3) **Locate a scene you want through the following operations if necessary.**

   Fast-forward/fast-reverse:
   Press the SLOW/REV (◄◄) or FWD/SLOW (►►) button.

   Forward/reverse slow-motion:
   First press the PAUSE button then press SLOW/REV (◄◄) or FWD/SLOW (►►).

   Forward/reverse frame by frame play:
   First press the PAUSE button then press the ADJUST button.

   • To resume normal playback, press the PLAY button.
   • You can play in fast-forward to within 10 seconds prior to the current broadcast.

4) **Press TIMESLIP to exit.**

   The current broadcast returns.

Notes
• Time slip recording/playback stops when the disc is filled up. You can play up to a location where the recorder stopped the recording. The time slip recording/playback cannot begin if the disc is full.
• The playback picture may appear after a delay of several seconds.
• The playback location will never be identical to the record location in the programme. It will always trail the record location by a few seconds.
• While using time slip recording/playback, you cannot program a recording.
• During the time slip mode, you cannot change the setting of the feature that turns off the recorder after a programmed operation has finished.
• Even while "Auto power off" is selected, the recorder does not turn off if the recording end time comes during playback of a programme being recorded.
• Playback may jump a few seconds back or pause depending on the disc or data condition.

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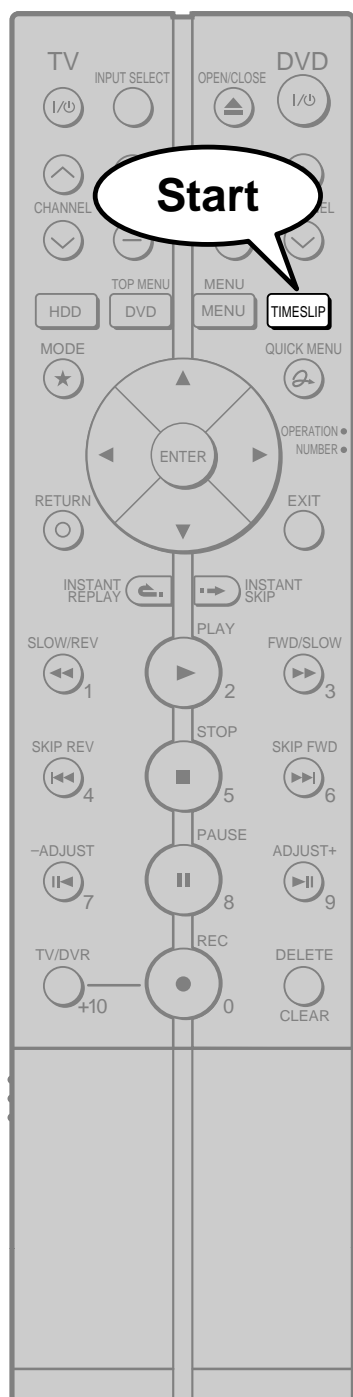
Pausing a TV broadcast to resume later (Pause TV)

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

This function enables you to pause a TV broadcast and resume viewing at a later, more convenient time, by storing the TV broadcast temporarily on the HDD.

1) While viewing a TV broadcast via this recorder or immediately before it starts, press TIMESLIP.

When Pause TV mode is ready, playback starts automatically.
The recorder begins to store the broadcast on the HDD the moment you press the TIMESLIP button.

2) Locate a scene you want by the following methods.

Fast-forward/fast-reverse:
Press the SLOW/REV (◄◄) or FWD/SLOW (►►) button.

Forward/reverse slow-motion:
Press the PAUSE button, then press the SLOW button.

Forward/reverse frame by frame play:
First press the PAUSE button then press the ADJUST button.

• To resume normal playback, press the PLAY button.
• You can play in fast-forward to within 10 seconds prior to the current broadcast.

3) Press TIMESLIP to exit this mode.

The recorder stops storing the broadcast on the HDD.
A message appears and asks you whether you will save the stored data or erase it.
Press the ◄ / ► buttons to select, then press the ENTER button.

Notes
• This function is not available during recording.
• Pause TV recording stops when the HDD is filled up. It will not begin if the HDD is full.
• While using this pause TV recording, you cannot program a recording.
• Playback may jump a few seconds back or pause depending on the disc or data condition.

Other playback functions (Continued)
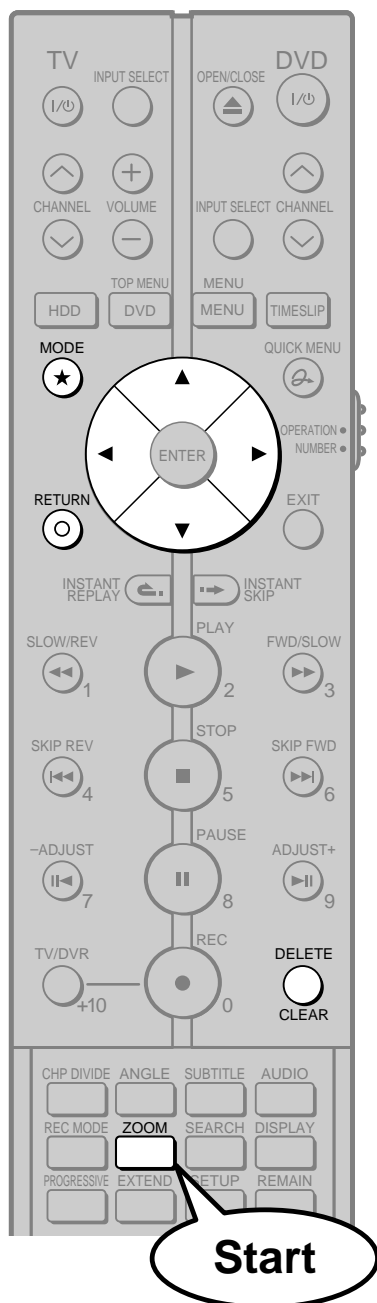
Zooming a picture

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

You can magnify areas within a picture.

1) Press ZOOM in the lid.
A zoom scope appears.

Zoom scope

2) Select a zoom point and magnification level.

MODE :
Raises the magnification level.

RETURN :
Lowers the magnification level.

▲ / ▼ / ◄ / ► :
Moves the zoom point. (only after the image has been magnified)

CLEAR (Set "OPERATION/NUMBER" switch to "NUMBER") :
Returns the zoom point to the center of the picture.

Notes
• Some discs may not respond to zoom feature.
• During some scenes, the buttons may not work as described.
• The zoom feature is canceled when the disc menu is operated.
• The magnification level varies depending on the picture size you select
  (▷ page 36, in "INSTALLATION GUIDE").
• The zoom feature is not available while displaying on the screen menu.
• The zoom feature is canceled when you stop playback or start playback.

■ **To cancel the zoom**

Press ZOOM.

Start
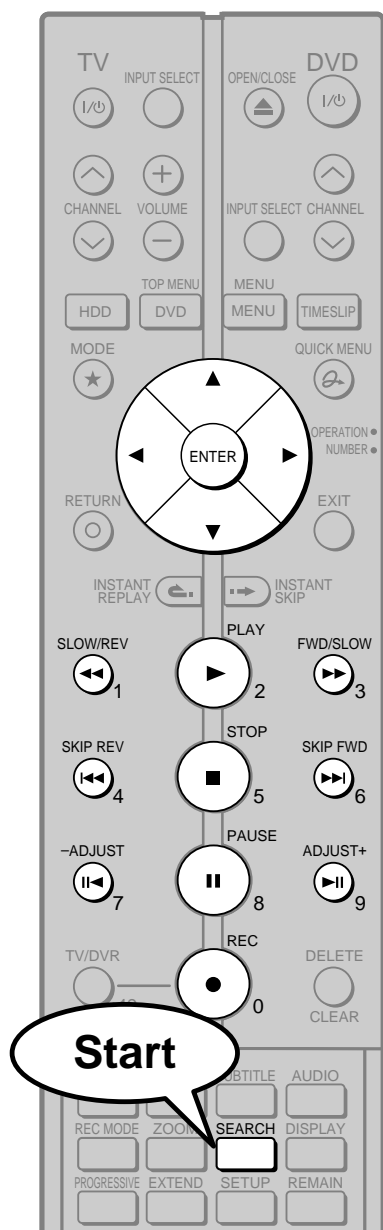
Locating by entering the number of a desired section

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

Normally titles, chapters, and tracks are numbered. By entering these numbers, you can access a desired section.

1) Press SEARCH in the lid.

e.g.

> Title 001
> Search Chapter 0001
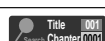
If you are using a VIDEO CD/audio CD, skip step 2.

2) Press ▲ / ▼ to select a section (title or chapter) you want to locate.

e.g.

> Title 001
> Search Chapter 0001

When you want to locate a chapter.

3) Press the number buttons to enter a number of the section.

When entering numbers, set "OPERATION/NUMBER" switch to "NUMBER".

e.g. To enter 25, press "2", then press "5".

4) Press ENTER.

Notes
- Pressing CLEAR button resets the numbers. To clear the display, press SEARCH button several times (depending on a disc).
- This method of locating a title is available only on a disc that contains title numbers.
- If a title is erased, the numbers of the following titles decrease respectively.
- When you record a new title (Original) on the HDD or a DVD-RAM disc, it is added prior to current titles (Playlist), and each following title (Playlist) reference number will advance by a factor of 1.

Locating a specific point by entering its elapsed time (Time Search)

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)	DVD-VIDEO	VCD	CD

1) Press SEARCH in the lid.

You may have to press repeatedly, depending on a disc. Press the button until the following display appears.

e.g.

> Title 001
> Search Time 00 : 00 : 00

2) Press the number buttons and ◄ / ► to enter the desired time location on the disc.

When entering numbers, set "OPERATION/NUMBER" switch to "NUMBER".

e.g. To enter 1 hour, 25 minutes, and 30 seconds

"0" → "1" → "►" → "2" → "5" → "►" → "3" → "0"
hour   minute   second

3) Press ENTER.

Notes
- Some discs may not respond to this process.
- Some scenes may not be accessed precisely as you specified.
- This method for accessing specific locations is available only within the current title of the HDD or a DVD-RAM/R/RW/DVD video disc or within a current track of a VIDEO CD/audio CD.
- Pressing CLEAR button resets the numbers.

Start

Other playback functions (Continued)

Selecting the sound   `HDD` `DVD-RAM` `DVD-RW (VR)` `DVD-RW (Video)` `DVD-R (VR)` `DVD-R (Video)` `DVD-VIDEO` `VCD` `CD`

You can select a preferred language and a sound format.

1 **Press AUDIO in the lid during playback or while receiving a broadcast.**

AUDIO

The current audio setting appears.

The language code appears instead of the language name. Refer to the list of languages and their abbreviations. (⇨ page 135)

2 **Press AUDIO while the audio setting is displayed on the TV screen.**

AUDIO

Variation of channels depends on the disc or the type of TV broadcast.

- `HDD` `DVD-RAM` `DVD-RW (VR)` `DVD-R (VR)` , TV channel signals

Stereo sound
→ "Stereo" (left channel and right channel)
→ "Stereo L" (left channel)
→ "Stereo R" (right channel)
(→ Back to "Stereo")

Dual Mono sound (NICAM)
"Dual L" → "Dual R" → "Dual LR" (→ Back to "Dual L")

The following discs can be switched by pressing the AUDIO button in the lid.

`DVD-RW (Video)` `DVD-R (Video)` `DVD-VIDEO`
Language name / sound recording system / No. of channels

e.g.

Sound	1 English	2ch
Output	PCM	

- `VCD`
"Stereo" → "Stereo L" → "Stereo R" (→ Back to "Stereo")

The display turns off if you do not operate for more than 3 seconds.

If you press the ▲ / ▼ buttons to select "Output," you can select the audio output setting (⇨ page 119) by using the ADJUST button.

Start

Notes
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate language from the selections on the disc menu.
- When you turn on the recorder or replace a disc, the recorder returns to the initial default setting. (⇨ page 115) Depending on the disc, the sound that is specified the disc is played back.
- Immediately after you have switched sounds, there may be a temporary discrepancy between the display and actual sound.
- The DIGITAL AUDIO OUT COAXIAL jack may not output NICAM Mode I/II sound you select. In this instance, set "Audio out select" to "PCM". (⇨ page 119)
- You cannot change NICAM sound if recorded with "DVD compatible mode" (⇨ page 28) set to "On". Even when "DVD compatible mode" (⇨ page 28) is set to "Off," the recorder regards it as "On (Mode I)" when recording to a DVD-R/RW disc video mode.

Recorded sounds

According to your setting of "NICAM" on the setup menu screen, (⇨ page 119), the sound is recorded onto different channels of the disc below. Set "NICAM" to "On" or "Off" appropriately.

Setting on the setup screen		Type of receiving broadcast	Contents of recorded sound		Type of record
DVD Compatible Mode	NICAM		Lch	Rch	
Off	Off	Mono + NICAM L, R	Mono	Mono	Stereo
		Mono + NICAM M1, M2	Mono	Mono	Stereo
		Mono + NICAM M1	Mono	Mono	Stereo
		Mono	Mono	Mono	Stereo
	On	Mono + NICAM L, R	L	R	Stereo
		Mono + NICAM M1, M2	M1	M2	Dual Mono*
		Mono + NICAM M1	M1	M1	Stereo
		Mono	Mono	Mono	Stereo
On (Mode I)	Off	Mono + NICAM L, R	Mono	Mono	Stereo
		Mono + NICAM M1, M2	Mono	Mono	Stereo
		Mono + NICAM M1	Mono	Mono	Stereo
		Mono	Mono	Mono	Stereo
	On	Mono + NICAM L, R	L	R	Stereo
		Mono + NICAM M1, M2	M1	M1	Stereo
		Mono + NICAM M1	M1	M1	Stereo
		Mono	Mono	Mono	Stereo
On (Mode II)	Off	Mono + NICAM L, R	Mono	Mono	Stereo
		Mono + NICAM M1, M2	Mono	Mono	Stereo
		Mono + NICAM M1	Mono	Mono	Stereo
		Mono	Mono	Mono	Stereo
	On	Mono + NICAM L, R	L	R	Stereo
		Mono + NICAM M1, M2	M2	M2	Stereo
		Mono + NICAM M1	M1	M1	Stereo
		Mono	Mono	Mono	Stereo

* This will be "Stereo" when a recording is made with "L-PCM" selected.
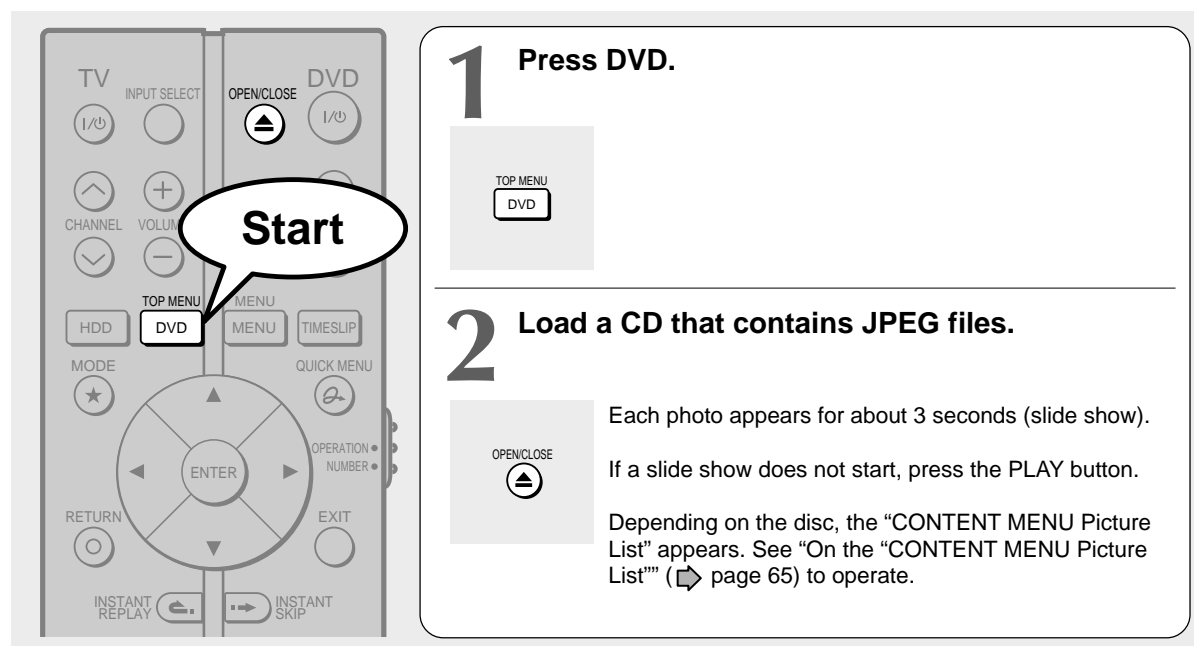
Other playback functions (Continued)

Viewing JPEG files

You can play JPEG files that have been recorded on a CD-R or CD-ROM on the recorder.

■ Preparations
- Prepare a compatible disc (⇨ page 65) that contains JPEG files you want to view.
- Set "Priority contents" (⇨ page 121) to "Photo".
- Make your TV shape conform to the 4:3 aspect ratio. Only 4:3 pictures can be played regardless of the function settings via the on-screen displays of the recorder (⇨ page 36, "INSTALLATION GUIDE"). If the TV is adjusted to other sizes, e.g. "WIDE," images will appear to be horizontally expanded. For details, refer to the owner's manual of your TV.

1 **Press DVD.**

TOP MENU
DVD

Start

2 **Load a CD that contains JPEG files.**

OPEN/CLOSE

Each photo appears for about 3 seconds (slide show).

If a slide show does not start, press the PLAY button.

Depending on the disc, the "CONTENT MENU Picture List" appears. See "On the "CONTENT MENU Picture List"" (⇨ page 65) to operate.

Notes
- Some files may not display their own entire images depending on the size.
- JPEG picture playback is not available during recording on the HDD.
- Operation to JPEG file will be disabled at about 5 minutes before a programmed recording starts.

■ To stop playback (slide show)
Press STOP.
If you press the PLAY button after pressing the STOP button, playback will start from the photo you stopped.

■ To pause playback (slide show)
Press PAUSE.
To resume, press the PAUSE button again or press the PLAY button.

■ To skip photos
During playback, press SKIP REV or SKIP FWD repeatedly.
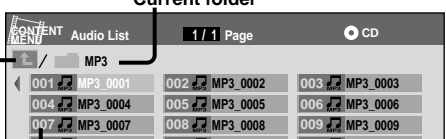▶▶ : To skip forward.
◀◀ : To skip backward.

■ To rotate a picture
Press ANGLE repeatedly.
Each time you press the button, the picture rotates by 90° degree.

Notes
- The rotated image is displayed after its original posture appears momentarily.

■ To magnify a picture
Follow the procedure on ⇨ page 60.

Notes
- The magnified image is displayed after its original posture appears momentarily.
- For small pictures, the reduction level may be limited.

■ **Viewing a specified photo (single view)**

Full screen still view.
2 ways are available:

● **On the "CONTENT MENU Picture List"**

1) Press DVD.

The "CONTENT MENU Picture List" appears.

Depending on the disc, the recorder creates either temporary folder, "Auto" or "All".

"Auto": For CD of which compatibility confirmed by TOSHIBA. Only playable files are listed.

e.g.

CONTENT MENU Picture List	1 / 3 Page	○ CD
↰ / Auto		
001 DH100001	002 DH100002	003 DH100001
004 DH100004	005 DH100001	006 DH100002
007 DH100003	008 DH100004	009 DH100005
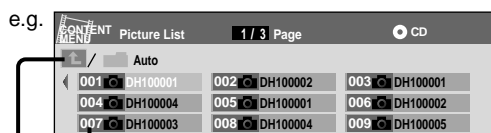
File number

If you select this icon and press the ENTER button, upper folders appear.

"All": For CD other than above. All files are listed.

e.g.

CONTENT MENU Picture List	1 / 3 Page	○ CD
↰ / All		
001 DH100001	002 DH100002	003 DH100001
004 DH100004	005 DH100001	006 DH100002
007 DH100003	008 DH100004	009 DH100005
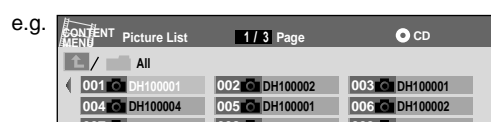
• Some CDs may not comply with the above.

2) Press ▲ / ▼ / ◄ / ► to select a folder or photo.

Pressing the SKIP REV or SKIP FWD button turns the pages.

If you press the MODE button, the list changes to thumbnail view ("CONTENT MENU Pictures").

e.g.

CONTENT MENU Pictures	1 / 8 Page	○ CD
// JPEG		
001	002	003	004
005	006	007	008
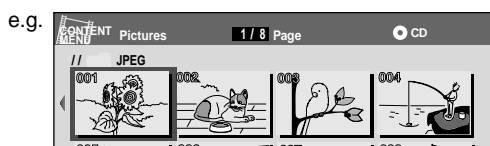
Pressing the ANGLE button rotates the picture. The rotation of pictures is kept until the CD is ejected.

To return to the previous list, press the MODE button again.

3) Press ENTER.

If you select a folder at step 2), repeat steps 2) and 3) until your favorite file appears.

The selected photo appears in full screen.

Notes
• The "CONTENT MENU Picture List" cannot show all the files in a disc, but only ones regarded as objects of regular play of the disc.
• The larger the file size is, the longer the thumbnail takes time to appear.
• Letters of a file/folder name overflowing the given space are not displayed.

● **Direct input of a photo number**

1) During playback or stop, press SEARCH.

An input window appears.

e.g.

🔍 Search	Photo	001
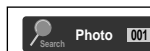
2) Input a photo number using the number buttons or ADJUST.

3) Press ENTER.

The selected photo appears in full screen.

■ **To change the playback order**

1) Press QUICK MENU.

2) Press ▲ / ▼ to select an item, then press ENTER.

To shift the cursor, press the ▲ / ▼ buttons.

Reverse	**: To reverse the order.**
Repeat	**: To repeat the current folder.**

Playback in the selected mode starts.
If it does not start, press PLAY.

● **JPEG files compatibility**

Discs whose compatibility with this recorder has been confirmed by TOSHIBA are as follows.

CANON QuickCD
FUJICOLOR CD
Kodak Picture CD
NORITSU QSS CD

JPEG disc compatibility with this recorder is limited as follows:
• Playable discs:
CD-ROM, CD-R
CD-RW is not recommendable.
• CD physical format:
Mode 1, Mode 2 XA Form 1
• File system:
ISO9660 Level 1, 2 or Joliet
• File name:
A file name should be in alphabet and numerals only, and must incorporate "JPG" extension.
e.g."********.JPG"
• Total number of folders:
Less than 256
• Total number of files:
Less than 1000

Some files may not display their own entire image depending on the size.

Some discs may not permit this operation. Especially, the following conditions of included files will increase the disc's disability.
1. Pixels over 5000 x 5000 in height and/or width
2. File format except Exif

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Other playback functions (Continued)

Playing MP3 files

You can play MP3 files that have been recorded on a CD-R or CD-ROM on this recorder.

■ Preparations
• Make sure that a disc you want to play is compatible with this recorder. See ▷ page 67.
• Set "Priority contents" (▷ page 121) to "Audio".

Start

1 **Press DVD.**

TOP MENU
DVD

2 **Load a CD that contains MP3 files.**

OPEN/CLOSE

Playback starts from the first track of a current folder.
If playback does not start, press the PLAY button.

Notes
• The DIGITAL AUDIO OUT COAXIAL jack outputs MP3 sounds in the linear PCM format regardless of the current "Audio out select" (▷ page 119) selection.
• You cannot change the playback speed of MP3 playback.

■ To stop playback
Press STOP.
If you press the PLAY button after pressing the STOP button, playback will start from the beginning of the track.

■ To pause playback
Press PAUSE.
To resume, press the PAUSE button again or press the PLAY button.

■ To skip tracks
During playback, press SKIP REV or SKIP FWD repeatedly.
▶▶| : To skip forward.
|◀◀ : To skip backward.

■ Selecting a track in the disc
2 ways are available:

On the "CONTENT MENU Audio List"

1) Press DVD.
The "CONTENT MENU Audio List" appears.
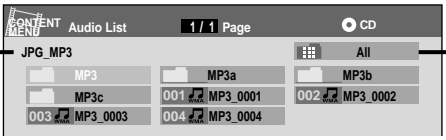
Current folder

e.g.

File number

If you select this icon and press the ENTER button, upper folders appear.

e.g.

Disc name **The recorder creates temporary folder "All", which contains all playable files.**

2) Press ▲ / ▼ / ◄ / ► to select a track or folder.

Pressing the SKIP REV or SKIP FWD button turns the pages.

3) Press ENTER.

If you select a folder at step 2), repeat steps 2) and 3) until your favorite file appears.

Notes
• The "CONTENT MENU Audio List" cannot show all the tracks in a disc, but only ones regarded as objects of proper play of the disc.
• Letters of a file/folder name overflowing the given space are not displayed.

Direct input of a track number

1) During playback or stop, press SEARCH.

An input window appears.

e.g.

> 🔍 Track 001
> Search
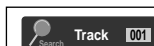
2) Input a track number using the number buttons or ADJUST.

3) Press ENTER.

■ **To change the playback order**

1) During playback or stop, press QUICK MENU.

2) Press ▲ / ▼ to select "Special playback mode", then press ENTER.

e.g.

> ♪ Quick Menu
> Special playback mode   Folder repeat
> Exit   Track repeat
>   Track random
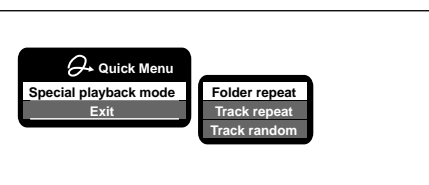
3) Press ▲ / ▼ to select an item, then press ENTER.

Folder repeat : To repeat the current folder.

Track repeat : To repeat the current file.

Track random : To play files in the current folder in a random order.

Notes
• To cancel these modes, stop the playback or select the cancel command from the Quick Menu.

● **Playable files**

MP3 disc compatibility with this recorder is limited as follows:
• Playable discs:
  CD-ROM, CD-R
  CD-RW is not recommendable.
• Sampling Frequency / Bitrate:
  MP3: 8 kHz, 11.025 kHz, 12kHz, 16 kHz, 22.05 kHz, 24 kHz / 8-160 kbps (CBR), VBR
  32 kHz, 44.1 kHz, 48 kHz / 32-320 kbps (CBR), VBR
• CD physical format:
  Mode 1, Mode 2 XA Form 1
• File system:
  ISO9660 Level 1, 2 or Joliet
• File name:
  A file name should be in alphabet and numerals only, and must incorporate "MP3" extension.
  e.g."********.MP3"
• Total number of folders:
  Less than 256
• Total number of files:
  Less than 1000

* This recorder supports ID3v2 (ID3 Tag Version 2) of MP3, to display text data such as names of title and artist. Some characters may not be displayed properly.

This recorder requires discs/recordings to meet certain technical standards in order to achieve optimal playback quality. Pre-recorded DVDs are automatically set to these standards. There are many different types of recordable disc formats (including CD-R containing MP3 files). Given the fact that technology in this area is still maturing, Toshiba cannot guarantee that all genre of recordable discs will produce optimal playback quality. The technical criteria set out in this owner's manual are meant as a guide only.

Customers should also note that permission is required in order to download MP3 files and music from the internet. Toshiba has no right to grant such permission. Permission should always be sought from the copyright owner.

Other playback functions (Continued)

Checking the current status and settings

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

You can confirm operational status and setting details.

● **Operational status and setting details**

1 Press DISPLAY.

DISPLAY

The following on-screen display appears. (The actual display varies depending on the disc.)

e.g. while playing a DVD-RAM disc

Elapsed time of a title/
Elapsed time of a chapter   **Mode indicator**

Title No./
Chapter No.   **Playback**   **Operating disc**
mode

Receiving
channel

Status display

e.g.
| ▶ | Title 002: 00:10:29 | Title | ● DVD | 3 |
| | Chapter 0005: 00:05:15 | repeat | RAM | Stereo |

2 Press DISPLAY again.

DISPLAY

An expanded display appears.
(Actual display varies depending on the disc.)
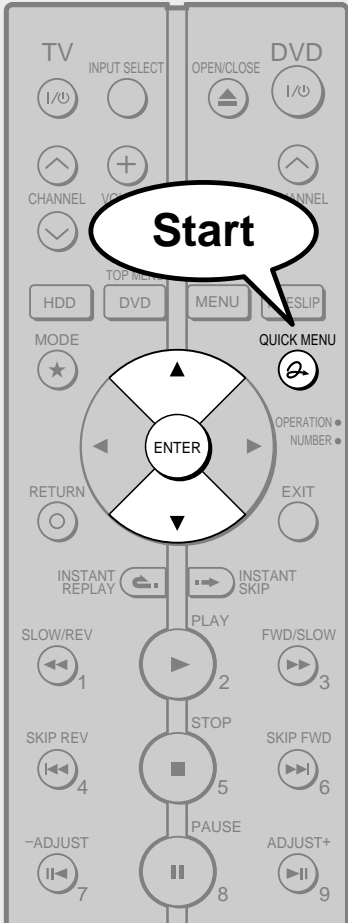
e.g.
Remaining time

| ▶ | Title 002: -00:22:01 | Title | ● DVD | 3 |
| | Chapter 0005: -00:00:07 | repeat | RAM | Stereo |

Virtual surround	: Off
Picture Quality	: SP
Audio Quality	: XPCM
Audio	: 1 Stereo R Original
Audio Output	: Bitstream
Subtitle	: – – – Off

3 Press DISPLAY again to turn the display off.

DISPLAY

Start

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● **Using the time bar**
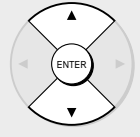
The time bar shows the current progress in playback or recording.

1 **During playback or recording, press QUICK MENU.**

QUICK MENU
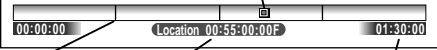
2 **Press ▲ / ▼ to select "TimeBar", then press ENTER.**

The time bar appears. (The actual display varies depending on the disc.)

e.g. Playback   Locator (Shows the current location.)

| 00:00:00 | Location 00:55:00:00F | 01:30:00 |

Chapter division

Elapsed time

Total playing time of a current title (In the case of a VIDEO CD or audio CD, it shows the total playing time of the disc.)

e.g. Recording   Locator (Shows the current location.)

| 00:00:00 | Location 00:18:00 | 00:30:00 |

Elapsed time   Elapsed recording time (per 30 minutes) (Recording end time if it comes within 30 minutes.)

Note
• Time display is an approximation.

■ **Changing the location of the time bar**
While the time bar is displayed, press ▲ / ▼.
The time bar shifts up and down.

■ **Turning off the time bar**
Press QUICK MENU and select "TimeBar" again, then press ENTER.

Other playback functions (Continued)

Functions in Quick Menu

Besides these examples, various other ones are introduced on respective pages for your convenience. See ▷ page 24 on how to operate the Quick Menu.

■ **To play repeatedly (Repeat playback)**

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD |

You can repeat a desired section.

1) **During playback, press QUICK MENU.**

2) **Press ▲ / ▼ to select "Special playback mode", then press ENTER.**

Special playback mode

The sub-menu appears. Select the next item by pressing the ▲ / ▼ buttons and the ENTER button.

Repeat all ORG titles

To repeat all Original titles in a disc.

Title repeat

To repeat the same title.

Chapter repeat

To repeat the same chapter.

A-B repeat

You can designate a portion in a title or track to repeat continuously.
If you select "A-B repeat" and press the ENTER button, the following display appears. Perform steps 1 and 2 below.

e.g.

| Ⓐ Ⓑ repeat | Set A |
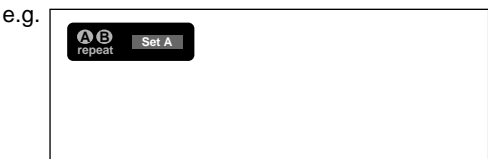
To cancel the procedure, press the RETURN button.

1) **Press ENTER at the beginning of the segment (point A) you want to repeat.**
The location of point A is memorized.
The display changes to "Set B".

2) **Press ENTER at the end of the segment (point B).**
The location of point B is memorized, and repeat playback begins between point A and B.

Track repeat

To repeat the same track.

Disc repeat

To repeat the entire disc.

Repeat all PL titles

To repeat all playlist titles in a disc.

Cancel repeat (in Repeat playback mode)

To resume normal playback.
Playback of the HDD, a DVD-RAM disc or a DVD-R/RW disc (VR mode) stops.

Notes
- Some discs may not permit repeat operation.
- You cannot use the repeat playback function in conjunction with the random playback function.
- If you press the STOP button during repeat playback, this operation is canceled.
- While you are performing repeat playback on the HDD, a DVD-RAM disc or a DVD-R/RW disc (VR mode), operations explained in ▷ page 48 may not be available.

■ **To check information on a title**

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

1) **During playback or stop, press QUICK MENU.**

2) **Press ▲ / ▼ to select "Title information", then press ENTER.**

Title information

■ **To exit the Quick Menu**

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Press QUICK MENU again.

or

Press ▲ / ▼ to select "Exit", then press ENTER.

Exit

Editing

You can create your own movie from your assembled scenes. Save your favorite videos in DVD discs.

- **Creating your own title**
- **Creating a DVD-Video using DVD-R/RW**
- **Other editing functions**

Creating your own title

You can edit recorded contents.

Note on deleting unnecessary scenes

It is not recommended that you delete many chapters from titles recorded on the HDD to remove unnecessary parts of the titles and copy those contents on a DVD-RAM disc. The reason is that discontinuous space inside the HDD expands and recorded contents are stored in gaps between used locations. Operating this repeatedly makes a recording area inside the HDD broken down into small and complicated spaces. (It is called fragmentation.) Even normal operations may get slow. Moreover, available space may not be restored by deleting or the HDD may have protection disabling playback or recording.

When you want to delete unnecessary parts from titles, collect necessary parts of chapters to make a playlist. Then copy the playlist and delete the original title or the playlist. For example, make a playlist and copy it to a DVD-RAM. Then delete original titles on the HDD. It can save time and effort and retain continuity in the HDD space. However, when moving a copy once program from the HDD to a DVD-RAM disc, delete unnecessary chapters from original titles. For details (⇨ page 88).

Running "All HDD titles delete" regularly prevents fragmentation from occurring.

In addition, if you select and run "HDD format", all data on the HDD will be erased. Copy TV programs you want to save recorded on the HDD from the HDD to a DVD-RAM or DVD-R/RW disc.

Editing procedure

1: **Changing a name of a recorded title**   (⇨ page 76)

2: **Dividing a recorded title into several chapters**   (⇨ page 77)

3: **Collecting necessary chapters**   (⇨ page 82)

4: **Dubbing to save**   (⇨ page 87)
To save in DVD-R/RW for distribution, see ⇨ page 98.

● **Other editing functions**
Changing the picture on CONTENT MENU   (⇨ page 106)
Combining two titles (Original) into one   (⇨ page 108)

Basic flow

● **Recording a TV program**

Record a TV program and it becomes an original title.
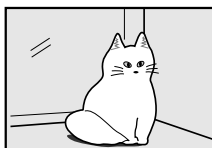
e.g.
Title: The world of cats and dogs.

● **Chapter editing**

Divide the original title into chapters.

Title 1: "The world of cats and dogs"
(Original)

Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6
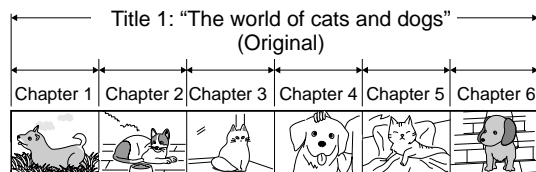
Divide chapters and create divisions of chapter

• You can play desired scenes from the top by "Chapter Divide".

• Divide chapters to edit a playlist.

● **Playlist editing**

Collect your favorite chapters to make them as one title. (Playlist)
If an original title is deleted, a playlist will be also deleted because playlists are fictitious titles.

e.g. Making a playlist by collecting scenes of cats from title 1 "The world of cats and dogs".

Title 1: "The world of cats and dogs"
(Original)

Title 1	Title 2	Title 3	Title 4	Title 5	Title 6

Playlist Editing

A fictitious playlist title that is different from the original title is created.
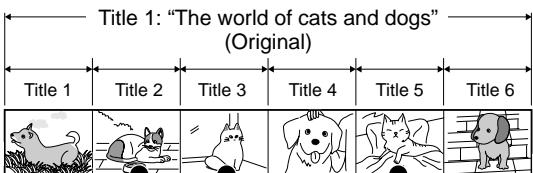
Title 1: "Cat's world"
(Playlist)

● **Dubbing**

Copy the playlist and it becomes an original title.

Using these editing functions to modify copyrighted content for any purpose other than your private viewing may be prohibited under the Copyright Laws, and may subject you to civil and criminal liability.

Creating your own title — 1: Changing a name of a recorded title (Continued)

1: Changing a name of a recorded title

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |
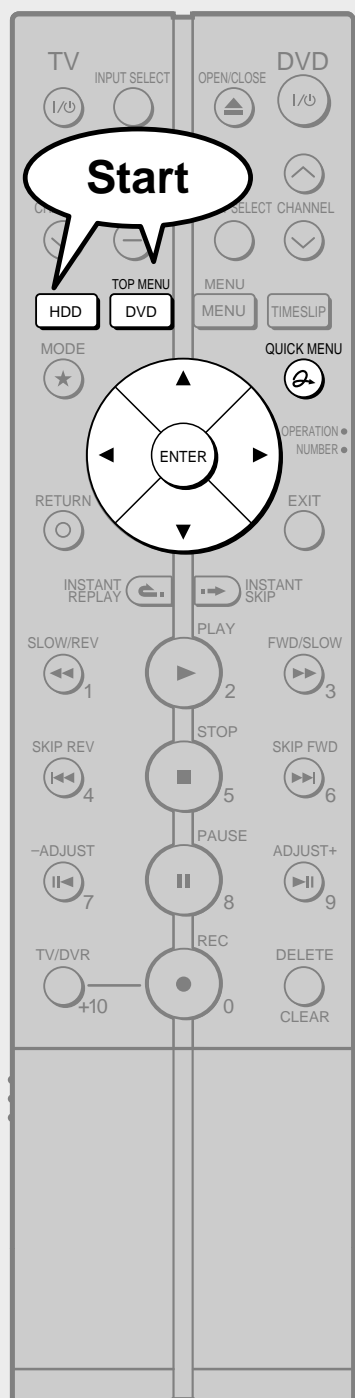
1 **Press HDD or DVD to select the drive.**

HDD

TOP MENU

DVD

HDD: Contents in the HDD
DVD: Contents in a loaded disc

(Contents recorded on other devices or those in a finalized DVD-R/RW are not displayed.)
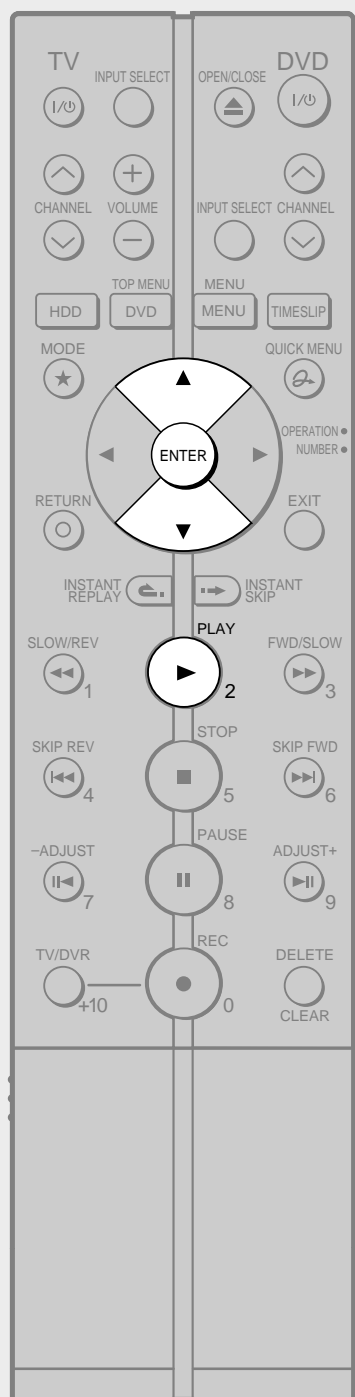
2 **Press ▲ / ▼ / ◄ / ► to select a title.**

3 **Press QUICK MENU then select "Title Information" by pressing ▲ / ▼ from the Quick Menu, then press ENTER.**

QUICK MENU

ENTER

"CONTENT MENU Title Information" appears.

e.g.

CONTENT MENU   **Title Information**

Title 006   3CH 2005 10/31(Mo) 10:00   (2:06:32)
2005/10/31 22:00 Ch:3

Documentary(general)

Media : HDD
Mode : LP
Rate : 2.2
Audio : D/M1   **Chapter : 0001 (0:04:15)**
DVD Mode : Off
Saving : Off
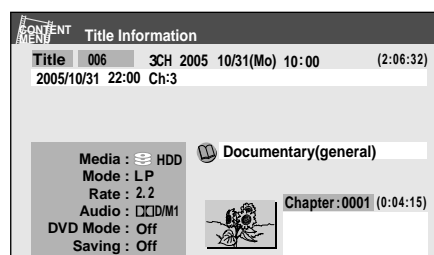
4 **Press QUICK MENU then select "Edit title name" or "Edit chapter name" by pressing ▲ / ▼ from the Quick Menu, then press ENTER.**

QUICK MENU

ENTER

The character entry screen appears.

- To change a title name or chapter name, see the steps on

2: Dividing a recorded title into several chapters

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

A recording makes 1 title, which includes 1 chapter. By dividing it into several chapters, it will be easier to access a desired scene, and your editing or playback will be much easier.

● Simple method
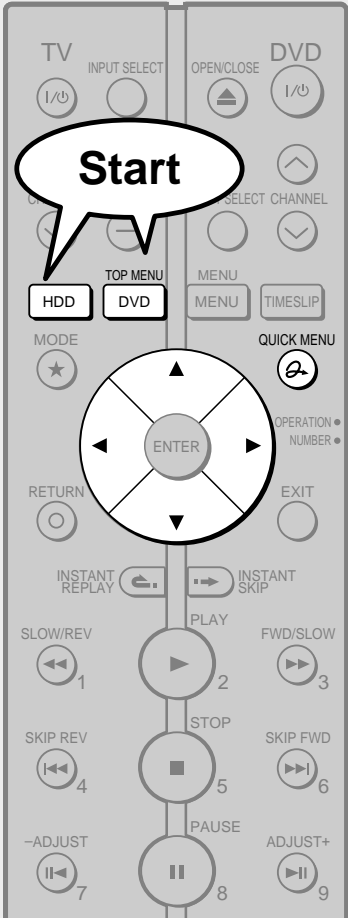
To create chapters in a title, insert a chapter mark. Playback the content, locate a point where you want to divide, then press the **CHP DIVIDE** button in the lid. You can insert a chapter mark also while recording, by pressing the **CHP DIVIDE** button in the lid. (A chapter will also be placed in the recording when you pause.)
The point divides the chapter (into two). You can create multiple chapters by repeating the above operation.

Notes
- Chapters cannot be created in the following modes:
  Dubbing / Fast-reverse, Fast-forward / Slow-motion
- You cannot divide a title of a DVD-R/RW disc (Video mode) into chapters. It is possible to create chapters in a DVD-R/RW disc (Video mode) in the following ways.
  - By pressing the CHP DIVIDE button during recording at the desired points.
  - By selecting an option that inserts chapter marks automatically during recording at regular intervals. (➡ page 28)
  - Recording a programme onto the HDD to make chapter divisions on it, then dubbing the title to a DVD-R/RW (Video mode).

● Precise method

If you want to modify the chapter division, or want to place a chapter mark more precisely monitoring the frame counter, follow the procedures below.

1 Press HDD or DVD to select the drive.
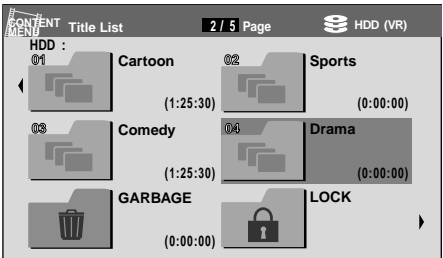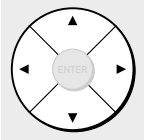
HDD: Contents in the HDD
DVD: Contents in a loaded disc

(Contents recorded on other devices or those in a finalized DVD-R/RW are not displayed.)

2 Press ▲ / ▼ / ◄ / ► to select a title.

e.g.

| CONTENT MENU | Title List | 2 / 5 Page | HDD (VR) |

HDD :
01 Cartoon (1:25:30)
02 Sports (0:00:00)
03 Comedy (1:25:30)
04 Drama (0:00:00)
GARBAGE (0:00:00)
LOCK

- The titles in a folder can be edited.

3 Press QUICK MENU.

The Quick Menu appears.

Creating your own title — 2: Dividing a recorded title into several chapters (Continued)

4 Press ▲ / ▼ to select "Edit function", then press ENTER.

The sub-menu appears.

e.g.

1 / 5 Page	HDD (VR)

Quick Menu
- Title information
- Create thumbnail
- Edit title name
- **Edit function**
- Disc information
- Folder function
- Move to bin
- Title delete
- Exit

Chapter editing
Auto chapter create
Save captured images

at show (0:29:50)

rds (2:40) Fishing lesson (0:54:30) Play List

005 Cruise (0:30:08) 006 Country life (0:51:28)
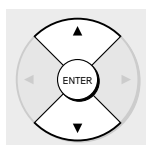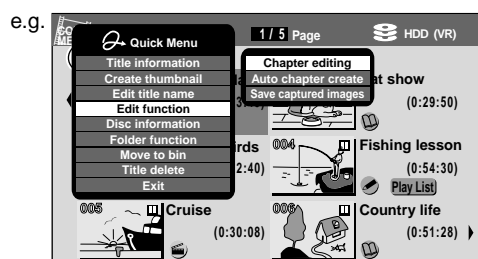
5 Press ▲ / ▼ to select "Chapter Editing", then press ENTER.

The EDIT MENU Chapter Editing display appears.

e.g.

EDIT MENU Chapter Editing   HDD (VR)

Fishing Guide

Original   Aspect Ratio 4:3

Location 00:00:00:03F   Divide
To create new chapter, select
desired start point via remote.
To set, press enter.

00:00:00   Title:004   Chapter:0001   00:54:30
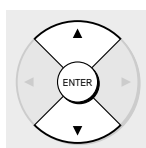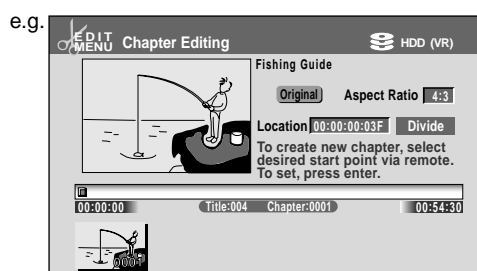
6 Press PLAY to start playback.

Locate a scene where you want to insert a chapter mark.

You can use the following buttons.
SLOW/REV, FWD/SLOW, SKIP REV, SKIP FWD,
PAUSE, ADJUST, etc.

The locator shows the current position on the time bar.
And the live video plays in the upper left.

- To access other chapters:
  Press the ▲ / ▼ buttons to move to the thumbnail
  display, then press the ◄ / ► buttons to select a
  desired thumbnail.
  To go to the next page, press the SKIP REV or
  SKIP FWD button.
- You can confirm the first and last scenes of a chapter.
  Select a thumbnail and press the ENTER button.
  3 seconds of the first and last scenes are played.

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Others
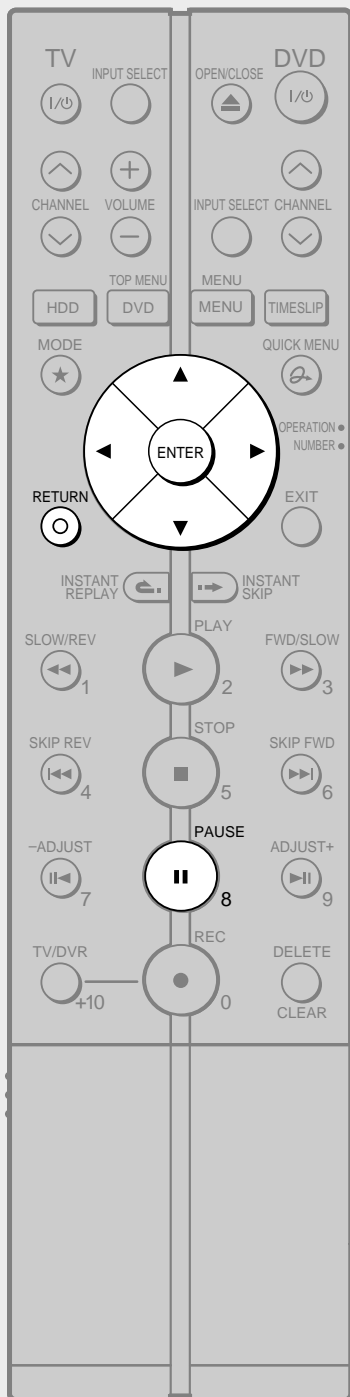
7 **At a point where you want to make a chapter division, press PAUSE.**

PAUSE

The picture pauses.

e.g.

EDIT MENU **Chapter Editing**   HDD (VR)

Fishing Guide

Original **Aspect Ratio** 4:3

Location 00:00:21:24F   Divide
To create new chapter, select
desired start point via remote.
To set, press enter.

00:00:00   Title:004   Chapter:0001   00:54:30

0001
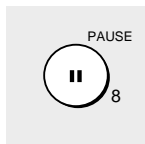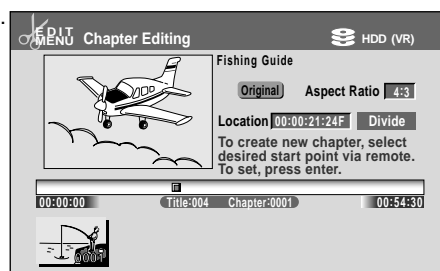
8 **Press ▲ / ▼ / ◄ / ► to select "Divide," then press ENTER.**
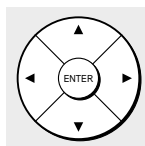
A chapter division is created at the selected location, and the first scene of the new chapter is registered as a chapter thumbnail. You can also make a chapter division by pressing the CHP DIVIDE button.

e.g.

EDIT MENU **Chapter Editing**   HDD (VR)

Fishing Guide

Original **Aspect Ratio** 4:3

Location 00:00:21:24F   Divide
To create new chapter, select
desired start point via remote.
To set, press enter.

00:00:00   Title:004   Chapter:0001   00:54:30

0001 0002
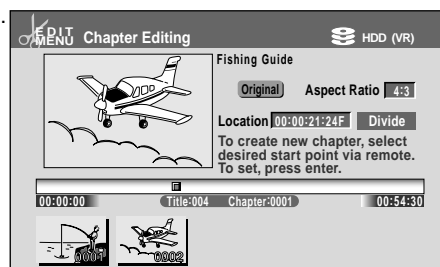
9 **Repeat steps 6 to 8.**

Locations of chapter division are indicated by the markers on the time bar.

To erase a chapter division, see "Merging chapters" (⇨ page 81).

10 **When all chapter divisions have been made, press RETURN.**

RETURN

The recorder displays a message, and starts saving the chapter divisions on the time bar.

When complete, the CONTENT MENU returns.

Creating your own title — 2: Dividing a recorded title into several chapters (Continued)

Notes

- This recorder supports a limited number of chapters on a disc. If exceeded, a message appears. In this event, reduce the number of chapters by merging chapters. (⇨ page 81)
- Making chapters in a title (Original) does not affect the related titles (Playlist).
- There may be a small difference between a location you marked and a chapter division actually played.
- Pausing a recording automatically creates a chapter division.
- During relief recording (⇨ page 36), a chapter division is automatically created at the start point of relief record.
- If you create chapters in a title which is stored in the HDD and copy the title to a DVD-R/RW (Video mode), the chapter divisions may shift.

■ **Creating chapters automatically**

You can create chapter marks from the beginning of a title at regular intervals automatically. (Chapter marks are added to those already existing.)
This is convenient for long programs, such as live sports games.

1) **Perform steps 1 to 4 on ⇨ pages 77 to 78.**

2) **Press ▲ / ▼ to select "Auto Chapter Create", then press ENTER.**

3) **Press ▲ / ▼ to select a chapter division interval, then press ENTER.**
Chapter divisions are automatically marked at the selected intervals.

■ **Notes on contents with 4:3 and 16:9 sizes mixed which will be copied to DVD-R/RW (Video mode)**

Some content from external sources may contain 4:3 and 16:9 pictures.
DVD-R/RW (Video mode) format cannot record contents in different picture sizes.
When you create chapters in such content to copy them onto DVD-R/RW (Video mode), find a point where 4:3 and 16:9 switches in "Aspect Ratio" and insert a chapter mark there, so that each chapter is either in 4:3 or 16:9 picture size.
There may be a case that the indicated "Aspect Ratio" differs from the actual picture, for example "4:3" displayed at a scene in 16:9 film. This is not a defect, as picture size is registered per unit of 15 frames (0.5 second), which is called GOP, and change of picture size within a GOP is disregarded.

■ Merging chapters

1) Perform steps 1 to 5 on ⇨ pages 77 to 78, to view the EDIT MENU Chapter Editing display.

2) Press ▲ / ▼ / ◄ / ► to highlight a chapter.
Pressing the SKIP REV or SKIP FWD button can access preceding or following pages.

3) Press QUICK MENU.

e.g.

Quick Menu
- Merge With Previous Cptr
- Merge With Following Cptr
- Merge All Chapters
- Auto Chapter Create
- Edit Chapter Name
- Exit

HDD (VR)
2005/10/14 17:09 Ch:3
Original Aspect Ratio 4:3
Location 00:00:00:03F Divide
To create new chapter, select desired start point via remote. To set, press enter.

00:00:00 Title: 002 Chapter: 0004 00:54:30

0001 0002 0003 0004
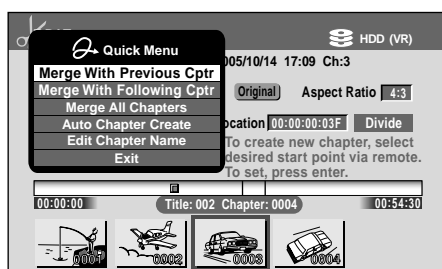
4) Press ▲ / ▼ to select an item.
Merge With Previous Cptr:
To delete the chapter division between the selected chapter and the previous one.

Merge With Following Cptr:
To delete the chapter division between the selected chapter and the succeeding one.

Merge All Chapters:
To merge all chapters in the title.

5) Press ENTER.

e.g. When "Merge With Previous Cptr" is selected:
The selected chapter is merged into the previous chapter and its thumbnail is erased.

e.g.

EDIT MENU Chapter Editing HDD (VR)
2005/10/14 17:09 Ch:3
Original Aspect Ratio 4:3
Location 00:00:00:03F Divide
To create new chapter, select desired start point via remote. To set, press enter.

00:00:00 Title: 002 Chapter: 0004 00:54:30

0001 0002 0003
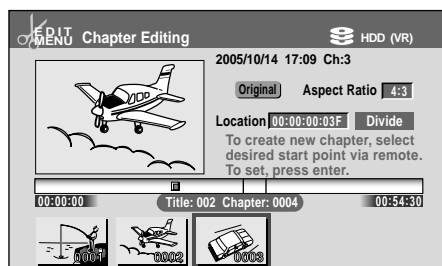
Notes
- When chapters are merged, the numerical value of following chapters will decrease correspondingly.
- Merging chapters does not affect the related titles (Playlist). You can also merge chapters in the title (Playlist). In this case, the title (Original) is not affected.
- You can access the feature of merging chapters also from the Quick Menu on the "CONTENT MENU Chapter List".

■ Naming a chapter

1) From the "EDIT MENU Chapter Editing", select a chapter which you want to name.

2) Press QUICK MENU.

3) Press ▲ / ▼ to select "Edit Chapter Name", then press ENTER.
A keyboard appears.
Enter a name following the on-screen icon guides.

Notes
- You can enter up to 64 characters.
- There is a limit to the number of chapters which can be named. If exceeded, a message appears.
- You can also access the keyboard to enter a chapter name by selecting a chapter with the SKIP REV or SKIP FWD button on the "CONTENT MENU Title Information", and by selecting "Edit chapter name" from the Quick Menu on the "CONTENT MENU Chapter List".
- You can change chapter names also on a DVD-R/RW disc, if the disc is not finalized yet.

Creating your own title — 3: Collecting necessary scenes (Continued)

3: Collecting necessary scenes

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Create a "Playlist" to omit unnecessary scenes for dubbing, or compile desired scenes.

1 Press MENU.

The Menu display appears.

MENU

2 Press ▲ / ▼ to select "Edit programme", then press ENTER.

The EDIT MENU Main Menu appears.

3 Press HDD or DVD to select the drive.

HDD

TOP MENU
DVD

HDD: Contents in the HDD.
DVD: Contents in a loaded disc.

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INPUT SELECT

I/⏻

OPEN/CLOSE

⏏

DVD

I/⏻

CHANNEL   VOLUME

+

−

INPUT SELECT CHANNEL

TOP MENU   MENU

HDD   DVD   MENU   TIMESLIP

MODE   QUICK MENU

★   ⌾

▲

◄   ENTER   ►

▼

OPERATION ●
NUMBER ●

RETURN   EXIT

◯

INSTANT
REPLAY   ⤺   ⤻   INSTANT
SKIP

SLOW/REV   PLAY   FWD/SLOW

◄◄ 1   ► 2   ►► 3

SKIP REV   STOP   SKIP FWD

I◄◄ 4   ■ 5   ►►I 6

−ADJUST   PAUSE   ADJUST+

II◄ 7   II 8   ►II 9

TV/DVR   REC   DELETE

◯ +10   ● 0   ◯ CLEAR
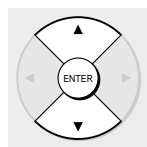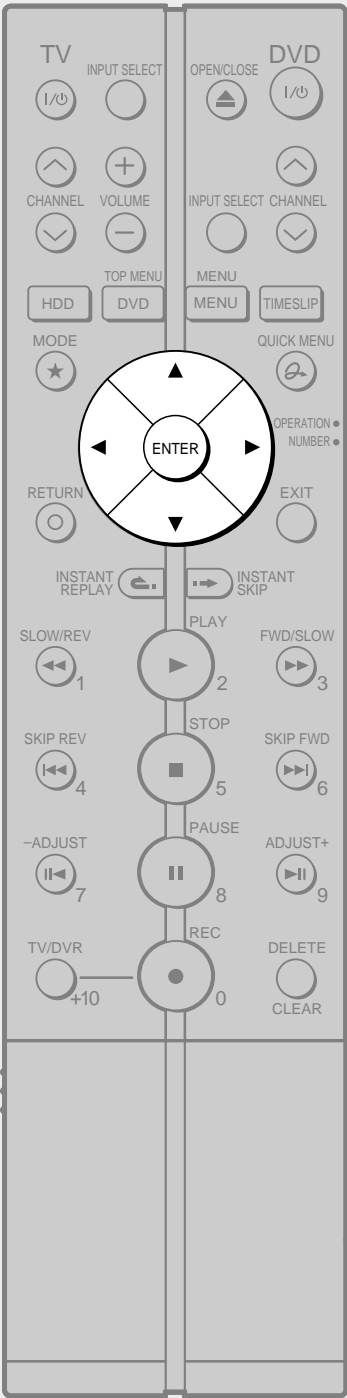
4 **Press ▲ / ▼ to select "Create a playlist", then press ENTER.**
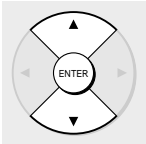
The "EDIT MENU Playlist Editing" appears.

e.g.

EDIT MENU Playlist Editing   HDD (VR)
HDD :   Source: (VR)Title Original
11   001   002   003
004   005   008   007   008
                                    Object: Title   Play List
Title: Entire Time: Start
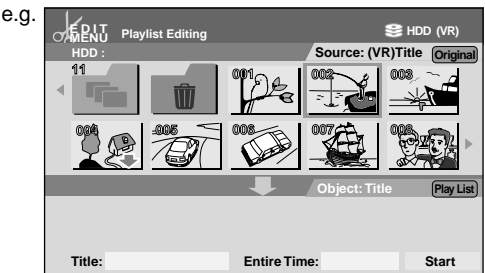
5 **Press ▲ / ▼ / ◄ / ► to select a title or chapter.**
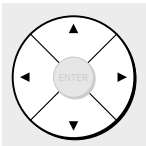
The titles (chapters) in a folder can be selected. To select between titles and chapters, press the MODE button.
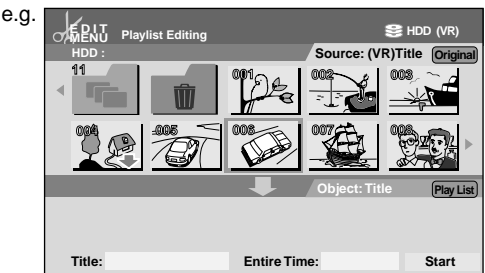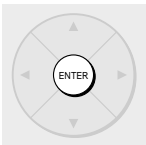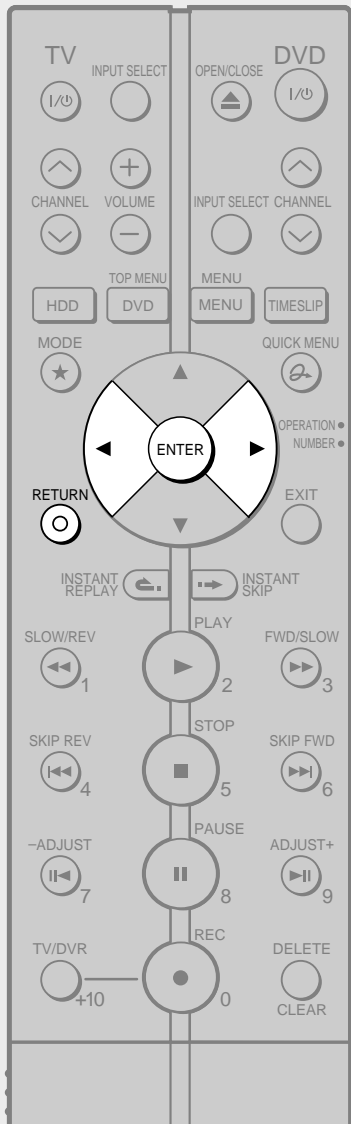
e.g.

EDIT MENU Playlist Editing   HDD (VR)
HDD :   Source: (VR)Title Original
11   001   002   003
004   005   008   007   008
                                    Object: Title   Play List
Title: Entire Time: Start

6 **Press ENTER.**

A cursor appears, indicating the point where the selected item will be inserted.

e.g.

EDIT MENU Playlist Editing   HDD (VR)
HDD :   Source: (VR)Title Original
11   001   002   003
004   005   008   007   008
                                    Object: Title   Play List

Cursor —

Title: Entire Time: Start
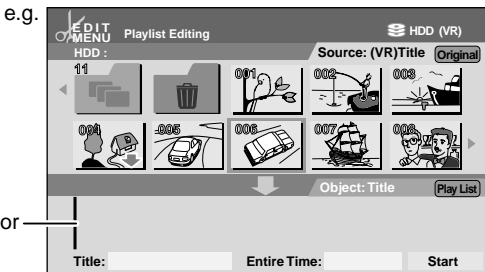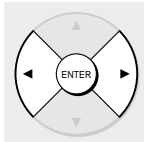
Creating your own title — 3: Collecting necessary scenes (Continued)

7 **Press ◄ / ► to select a point where you want to insert the item, then press ENTER.**

If there are no parts in the lower area, leave the cursor to the left and press the ENTER button.

The selected part is inserted at the location of the cursor.

e.g.

EDIT MENU Playlist Editing	HDD (VR)
HDD :	Source: (VR)Title [Original]

Title: 2005/11/07 10:30   Entire Time: 00:13:45   Start

8 **Repeat steps 5 to 7 to insert items.**

To cancel the selection, see "Cancelling selection of a part" (▷ page 105).

9 **When all items have been inserted, press RETURN.**

The recorder displays a message, and starts saving the Playlist.

When complete, the "EDIT MENU Main Menu" returns.

If the part first chosen is in a folder, the playlist will be created in this folder.

Notes
- If you delete titles and chapters (Original), the corresponding titles and chapters (Playlist) are also deleted. Contrarily, if you delete titles and chapters (Playlist), the corresponding titles and chapters (Original) are not deleted.
- Playback may pause if a gap between the content is played.
- There may be a small difference between the chapter boundary and the actual playback picture.
- A title or chapter which is being edited cannot be selected as an item.
- You cannot add a title of still pictures, or a title or a chapter which contains both still and moving pictures, to a playlist.
- By copying (dubbing) a Playlist, a title (Original) of the same contents is created.
- You cannot program a Playlist of contents recorded on a DVD-R/RW disc (Video mode). To make a Playlist using contents of DVD-RW discs (Video mode), copy them to the HDD beforehand.
- Down arrow on the thumbnails means: Orange: This title already selected. Green trimmed: Some chapters in this title already selected. Green: This chapter already selected.
- A black thumbnail with "Recording" means that the title is being recorded or its recording will start within 15 seconds. This thumbnail cannot start playback.

Creating your own title — 3: Collecting necessary scenes (Continued)

■ **Selecting chapters with even or odd numbers**

You can select necessary parts at once if they are alternating with unnecessary ones.

1) On "EDIT MENU Playlist Editing", press MODE to display chapters.

2) Press QUICK MENU.

3) Press ▲ / ▼ to select "Odd number chapers" or "Even number chapters".

4) Press ENTER.

4: Dubbing to save

When you want to dub, press MENU then select "Dubbing", then press ENTER.
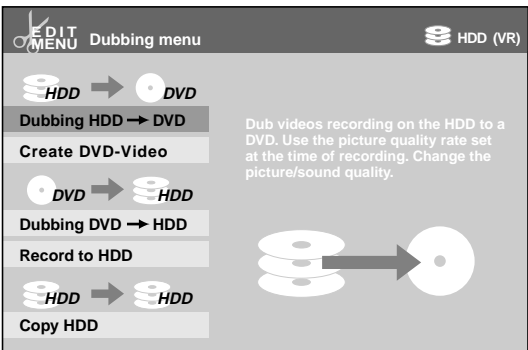
Select the type of dubbing, referring to the introduction on screen.
Proceed to the respective pages for each procedure.

Dubbing HDD→DVD	You can copy/move recorded contents in the HDD to a DVD disc. ⇨ page 90
Create DVD-Video	You can copy recorded contents in the HDD to a DVD-R/RW (Video mode) to create a DVD-Video disc. ⇨ page 98
Dubbing DVD→HDD	You can copy recorded contents in a DVD disc to the HDD. ⇨ page 94
Record to HDD	You can record copy-free contents in a disc to the HDD while playing. Use this method in the following cases; – To copy contents of a finalized DVD-R/RW, to the HDD. – To copy contents of a DVD-R/RW which was recorded on other devices therefore cannot display CONTENT MENU on this recorder, to the HDD. ⇨ page 95
Copy HDD	You can copy recorded contents in the HDD to make another within the HDD. ⇨ page 96 Use this method also when you create a new title (Original) from a title (Playlist).

Creating your own title — 4: Dubbing to save (Continued)

■ **"Copy" and "Move"**

This recorder's "Dubbing" has the following two definitions:

Copy:
The original programme remains after the operation is completed.

Move:
The moved programme will be erased from the original location after the operation is completed.

Whether or not you select either command depends entirely on the given situation. The command may be predetermined in some situations.

You cannot "move" contents in the following situations. (Instead, you will want to "copy" them.)

- The content is protected (⇨ page 43).

- A specified portion of the title (chapter) is copy-protected, in which case, you cannot move from DVD-RAM or DVD-R/RW (VR mode) to the HDD.

- You cannot move a Playlist. Only copying is permitted. When you copy a Playlist to a disc, it will be treated an Original on the disc. The original Playlist does not change to an Original.
Contents in the HDD cannot be moved to DVD-R/RW (Video mode).
Contents in DVD-R/RW (Video mode) cannot be moved to the HDD either.

Also, you cannot "move" or "copy" contents in the following situations:

- The recorded content contains a programme that permits a single copy only.

- The title (Playlist) contains a portion that prohibits copying. Edit the title from the Original and create a new Playlist.

Notes
- If either the HDD or DVD-RAM is not in optimum physical condition, an error may occur when you execute "Move" and some titles or chapters may be lost. If you want to "Move" non-copy-protected titles and chapters, it is recommended for safety that you first "Copy" them to the opposite drive and confirm they have been copied properly. Then delete the titles and chapters to which you have executed "Move".
- The recorder cannot copy/move the following discs:
  - DVD-VIDEO
  - VIDEO CD
  - Audio CD
  - CD-R
  - CD-RW
- If you cannot copy/move for some other reason, such as insufficient disc capacity, etc., a message will appear on screen. In such a case, follow the instructions in the message.
- Depending on the content, associated information such as data management may not be copied/moved.
- You cannot copy/move titles containing still pictures.
- Dubbing to DVD-R/RW may divide the original title depending on the contents. Also, the DVD-Video format recording (⇨ page 98) may shift thumbnails.
- A part with aspect ratio 16:9 recorded at bit rate 1.0 Mbps or 1.4 Mbps cannot be dubbed to a DVD-R/RW (Video mode). Change the aspect ratio to 4:3.
- "High speed dubbing" to a DVD-R/RW (⇨ page 90) always comply with "Aspect ratio(Video mode)" setting (⇨ page 28).

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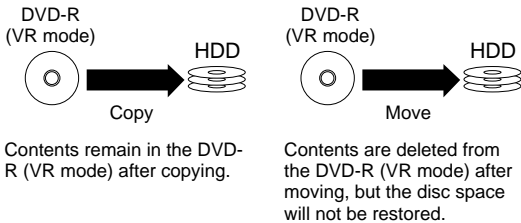
Others

■ Playback and recording during dubbing

While copying (High speed dubbing), the disc drives (HDD, DVD) can play or record (not possible while moving a file).

- While dubbing from HDD to DVD, HDD can play or record. DVD cannot.
- While dubbing from DVD to HDD, no other operations are available.
- While dubbing from HDD to HDD, DVD can play or record. HDD cannot.
- While dubbing from HDD to DVD, HDD cannot play and record at the same time.
- While dubbing from HDD to HDD, DVD cannot play and record at the same time.
- **Dubbing may be cancelled if the start time of a timer programme recording is reached,** as time programme recording has priority over dubbing.
- While the recorder is performing dubbing and recording at the same time, CONTENT MENU cannot be displayed.

	HDD Playback	HDD Recording	DVD Playback	DVD Recording
HDD→DVD	Yes	Yes	No	No
DVD→HDD	No	No	No	No
HDD→HDD	No	No	Yes	Yes

■ On dubbing from a DVD-R (VR mode)

Copy-free contents recorded in a DVD-R (VR mode) can be dubbed to the HDD. However, please note that moving content does not restore the disc space of the DVD-R (VR mode).

Contents remain in the DVD-R (VR mode) after copying.

Contents are deleted from the DVD-R (VR mode) after moving, but the disc space will not be restored.

Creating your own title — 4: Dubbing to save (Continued)

● **Dubbing contents in the HDD to a DVD disc**

■ **Preparation**
• Load a disc to which you dub.
• Select "Dubbing HDD→DVD" (page 87), then press ENTER.

1
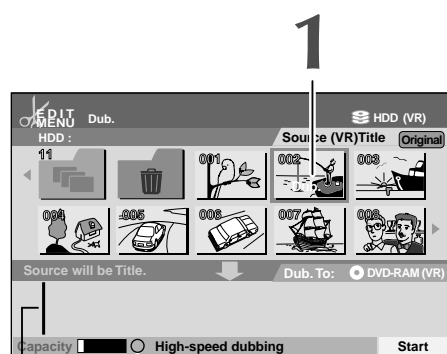
2

You can confirm whether dubbing is possible or not.
O : Can be dubbed.
△ : Can be dubbed in "Fit".
X : Cannot be dubbed.
• If marked "X", reduce the contents to dub, by cancelling some parts, etc.
• When you set "Change quality", the dubbing may be possible by lowering the rate even if marked "X".

■ **Selecting the dubbing mode**

1) **Press QUICK MENU.**

2) **Press ▲ / ▼ to select "Change dubbing mode", then press ENTER.**

Note
• Video mode can record only one of bilingual tracks. If you want to dub bilingual content to DVD-R/RW (Video mode), Select one of tracks from the Quick Menu.
To record main sound:
"To fit (main)" or "Change quality (main)"
To record sub sound:
"To fit (sub)" or "Change quality (sub)"

1 Press ▲ / ▼ / ◄ / ► to select a title or chapter to copy, then press ENTER.

To turn the page:
Press SKIP REV.
Press SKIP FWD (next page).

To switch the view between titles and chapters:
Press MODE.

2 Press ◄ / ► to select a location to place the selected part, then press ENTER.

A cursor appears, indicating the point where the selected item will be inserted.
If there are no parts in the lower area, leave the cursor to the left and press the ENTER button.
The selected part is inserted at the location of the cursor.

Dubbing modes
●**"High-speed dubbing"/ "High-speed moving"**
You can copy recorded contents without changing the picture and sound quality. "High-speed" means the dubbing time is shorter than the actual time of the content. Use this mode for normal dubbing. If the disc space is not sufficient for recording of the contents you selected, the recorder automatically switches this mode to "To fit".

●**"To fit", "Move to fit", "To fit (Main)", "To fit (sub)"**
If the disc space is not sufficient for recording of the contents you selected, the recorder automatically lowers the picture and sound quality so that the contents fit in the disc space. The minimum rate of this mode is 2.0.

●**"Change quality", "Change quality moving", "Change quality (main)", "Change quality (sub)"**
Picture and sound quality of your usual selection (page 29) is used to dub. If you switch it to another, use the Quick Menu.

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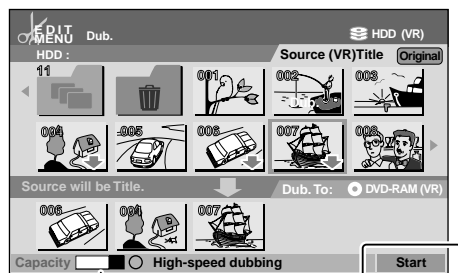
3 **Repeat steps 1 to 2.**

You can confirm the available space of the destination media via the bar at the bottom of the display.

Each of the collected parts is recorded on the destination media as a title.

4 **Press ▼ to select "Start", then press ENTER.**

Read the message, and press ◄ / ► to select "Yes", then press ENTER.

Dubbing starts.

If you dubbed onto a DVD-R/RW and you want to play it also on other DVD device, the disc needs to be finalized (writing completion process) on this recorder. Proceed to the next page to finalize the DVD-R/RW.

Note
• Copying of titles or chapters of copy-once content is prohibited. If you select titles or chapters of copy-once content and add those of normal content, copying them is not possible but only moving is available. If you want to copy titles or chapters, do not select titles or chapters of copy-once content. Adding titles or chapters of copy-once content is not accepted.

■ **Cancelling during dubbing**

Press QUICK MENU to display the Quick Menu.

Press ▲ / ▼ to select "Cancel dubbing", then press ENTER.

■ **Turning off the power automatically after dubbing**

1) **During dubbing, press QUICK MENU.**

2) **Press ▲ / ▼ to select "Auto power off", then press ENTER.**

Creating your own title — 4: Dubbing to save (Continued)

■ Enabling a DVD-R/RW (Video mode) to which you dubbed contents to be played on other DVD players

It is necessary to finish writing data of the disc (finalizing). Perform the following procedure to finalize the disc.

Important
- You cannot rewrite data onto a disc after you execute the DVD-Video finalizing process. However, the disabled rewritability of a DVD-RW disc can be restored by cancelling the process of the disc (⇨ page 93). On DVD-R discs, cancelling of the DVD-Video finalizing process is not available.
- Cancelling of the DVD-Video finalizing process is available only on DVD-RW recorded or copied contents on this recorder.

1) **During playback or stop, press MENU.**
   The Menu display appears.

2) **Press ▲ / ▼ to select "Edit programme", then press ENTER.**
   The "EDIT MENU Main Menu" appears.

3) **Press DVD, then load a DVD-R/RW disc which you want to finalize.**

4) **Press ▲ / ▼ to select "Finalize/cancel DVD".**

5) **Press ENTER.**
   A display of option settings appears.

   e.g.

   DVD-Video Finalize(Option Settings)

Menu Create	◉ Title+Chapter	○ Title	○ Chapter ○ None
Start Play	○ **Menu**	◉ **Title 1**	
After play one title	○ **Menu**	◉ **Next Title**	
After play final title	◉ **Menu**	○ **Title 1**	○ **Stop**
Writing Test	◉ **None**	○ **Parts Test**	○ **All Test**
Set aspect ratio	◉ **Original**	○ **4:3 fixed**	○ **16:9 fixed**

   Return   **Next**
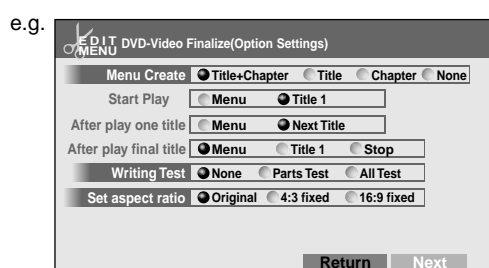
6) **Press ▲ / ▼ / ◄ / ► to select.**
   As you select each item, its function is explained.

   When "Menu Create" is set to "None":
   "Start play" and "After play one title" are automatically omitted.

7) **Press ▲ / ▼ to select "Next", then press ENTER.**
   Information on data to be processed appears.

   e.g.

   DVD-Video Finalize(Disc Information)

   Disc Name

   Edit Name

Total title number	11
Total time	1 hour 24 min.

   Return   **Next**
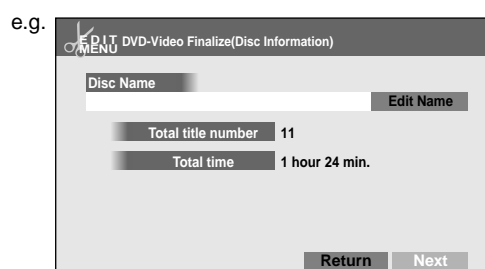
   If you press the ▲ button to select "Edit Name" then press the ENTER button, a keyboard appears so that you can enter a title name.

   When "Menu Create" is set to "None":
   Select "Writing" at the right bottom by the ▲ / ▼ / ◄ / ► buttons and press the ENTER button. Skip to step 12).

8) **Press ▼ to select "Next", then press ENTER.**
   When "Menu Create" is set to "Title+Chapter" or "Title", a display of title menu selection appears.

   To view your captured images (⇨ page 104), go to the next page.
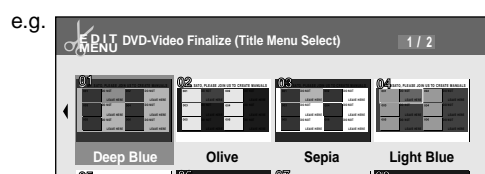
   e.g.

   DVD-Video Finalize (Title Menu Select)   1 / 2

Deep Blue	Olive	Sepia	Light Blue

   If you press the MODE button, you can preview the selected menu. To return, press the RETURN button.

   While displaying a preview screen of your captured image, you can access the other menu to correct colour (⇨ page 105) by pressing the MODE button.

9) Press ▲ / ▼ / ◄ / ► to select the title menu, then press ENTER.

A display of chapter menu selection appears if "Menu Create" is set to "Title+Chapter" or "Chapter" at step 6).

Images you captured ("Save captured images", ➡ page 104,) are listed on the next page.

10) Press ▲ / ▼ / ◄ / ► to select the chapter menu.

A selected menu is applied to all chapters. You cannot allocate a menu to each chapter.

If you press the MODE button, you can preview the selected menu. To return, press the RETURN button.

If you press the ▼ button during preview, to select "Return" then press the ENTER button, you can go to the preview of the selected title menu. To return to the preview of chapter menu, press the ▲ / ▼ / ◄ / ► buttons to select a number next to "Chapter Menu" then press the ENTER button.

11) Press ENTER on the "EDIT MENU DVD-Video Finalize (Chapter Menu Select)" display, and select "Yes" by ◄ / ►, then press ENTER.

A message appears to ask you if you want the power to turn off automatically or not when the process is completed.

12) Press ◄ / ► to select "Yes" or "No", then press ENTER.

A message disappears and the finalize process starts.

Notes
- DVD-R/RW discs (Video mode) recorded on this recorder may not be recognized on other devices unless you execute DVD-Video finalizing process to them.
- You can record onto a DVD-R disc additionally to the limit of the disc capacity, unless you execute the DVD-Video finalizing process to it. Deleting of recorded titles is also possible, however, the disc space cannot be restored.
- You can record additional content onto a DVD-RW disc additionally to the limit of the disc capacity unless you execute the DVD-Video finalizing process to it. Deleting of recorded titles is also possible, however, the disc space can be restored only by the volume of the title last recorded.
- On DVD-RW discs, it is possible to cancel the DVD-Video finalizing process or to initialize for a new use.
- If a start time of a programmed recording comes during finalizing process, the recording is made onto the HDD. However, while making a menu, the recording is not executed. Also, when "Relief recording" is set to "Off" the recording will not start.

■ To cancel the finalize process `DVD-RW (Video)`

You can cancel the DVD-Video finalizing process executed to a DVD-RW disc (Video mode) so that the disc can be recordable again.

1) Press HDD, then press MENU.
The Menu display appears.

2) Press ▲ / ▼ to select "Edit programme", then press ENTER.

3) Press DVD, then load a disc to cancel the finalize process.

4) Press ▲ / ▼ to select "Finalize/cancel DVD", then press ENTER.

5) Read the message, and press ◄ / ► to select "Yes", then press ENTER.
The process starts.

Notes
- While the recorder is ready to start a programmed recording, you cannot cancel the DVD-Video finalizing process.
- You cannot cancel the DVD-Video finalizing process executed on a DVD-RW disc (Video mode) recorded on other device.
- You cannot cancel the DVD-Video finalizing process executed on a DVD-RW disc if the disc is protected.
- Cancelling the DVD-Video finalizing process may shift the thumbnails of titles/chapters.

■ DVD-R/RW (VR mode) finalizing

DVD-R/RW (VR mode) can also be finalized. A finalized DVD-R/RW (VR mode) may be able to be played on other devices which are compatible with VR mode.

1) During stop, press MENU.

2) Press ▲ / ▼ to select "Edit programme", then press ENTER.

3) Press DVD, then load a disc which you want to finalize.

4) Press ▲ / ▼ to select "Finalize/cancel DVD", then press ENTER.

5) Read the message, and press ◄ / ► to select "Yes", then press ENTER.
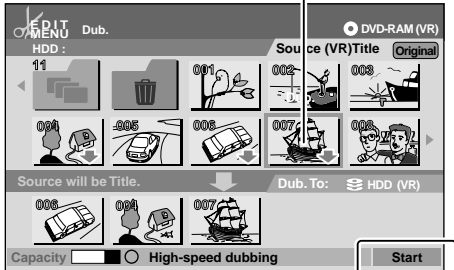The process starts.

To cancel finalization

Follow the same procedure as in DVD-R/RW (Video mode). Finalization of DVD-R (VR mode/Video mode) cannot be cancelled.

Creating your own title — 4: Dubbing to save (Continued)

● Dubbing contents in a DVD disc to the HDD

■ Preparation
• Load a disc to which you dub.
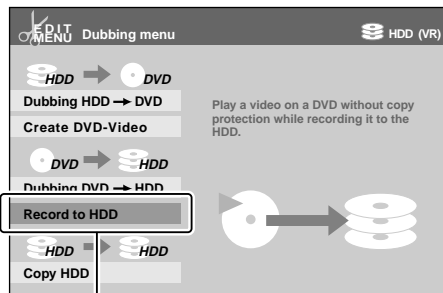• Select "Dubbing DVD→HDD" ()

1

EDIT MENU Dub. ● DVD-RAM (VR)
HDD : Source (VR)Title Original
11 001 002 003
004 005 006 007 008
Source will be Title. Dub. To: ⬛ HDD (VR)
008 004 007
Capacity ○ High-speed dubbing Start

2

1 Perform steps 1 to 2 on , to select a part.

2 Press ▼ to select "Start", then press ENTER.

Read the message, and press ◄ / ► to select "Yes", then press ENTER.

Dubbing starts.

Note
• For options such as dubbing mode selection, see .

● **Recording copy-free content in a disc to the HDD while playing**

1 **Press MENU.**
A menu appears.

2 **Load a disc you want to play.**

3 **Press ▲ / ▼ to select "Dubbing", then press ENTER.**
"EDIT MENU Dubbing menu" appears.

4 **Press ▲ / ▼ to select "Record to HDD", then press ENTER.**
Recording starts.

[EDIT MENU Dubbing menu screen showing:]
HDD (VR)
HDD ➡ DVD
Dubbing HDD ➔ DVD
Create DVD-Video
DVD ➡ HDD
Dubbing DVD ➔ HDD
Record to HDD
HDD ➡ HDD
Copy HDD

Play a video on a DVD without copy protection while recording it to the HDD.
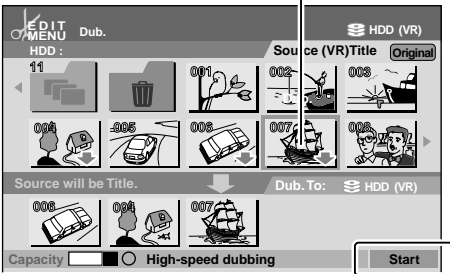
Notes
- A title created by this feature has black pictures at both the beginning and the end of the title. Therefore, thumbnails in the "CONTENT MENU" may be black. To change the thumbnail, see ⇨ page 106.
- "Record to HDD" is not available on copy-prohibited DVD video discs and audio CD.
- "Record to HDD" is not available on copy-once content.
- While performing this recording, "LineU" appears on the TV screen and "L-U" on the front panel display.
- "Line:U" is given to names of title created by this feature.

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Creating your own title — 4: Dubbing to save (Continued)

● **Copying recorded content in the HDD to create a new title (Original)**

Use this method also when you create a new title (Original) from a title (Playlist).

1

EDIT MENU Dub. HDD (VR)
HDD : Source (VR)Title [Original]
11 001 002 003
004 005 008 007 008
Source will be Title. Dub.To: HDD (VR)
008 004 007
Capacity ○ High-speed dubbing Start

2

1 Perform steps 1 to 2 on ➡ page 90, to select a part.

2 Press ▼ to select "Start", then press ENTER.

Read the message, and press ◄ / ► to select "Yes", then press ENTER.

Dubbing starts.

Note
• For options such as dubbing mode selection, see ➡ page 90.

■ Discs and dubbing functions

From	To	High-speed dubbing	To fit	Change quality	Record to HDD
HDD	HDD	Yes	Yes	Yes	No
	DVD-RAM	Yes	Yes	Yes	No
	DVD-R/RW (Unfinalized)	Yes	Yes	Yes	No
DVD-RAM	HDD	Yes	Yes	Yes	Yes
DVD-R/RW	HDD	Yes	Yes	Yes	Yes

- "High-speed dubbing" is not available between the HDD and a DVD-R/RW (Video mode) recorded on other devices.
- "High-speed dubbing" is not available when dubbing to a finalized DVD-R/RW.
- "Record to HDD" is not available on an unfinalized DVD-R/RW (Video mode) which was recorded on other devices.
- The feature for dubbing of contents in folders (see below) does not work on "Record to HDD".

■ Feature for dubbing of contents in folders

It is not possible to designate a receiving folder when dubbing contents in a folder. However, if you beforehand make a folder of the same name on the receiving disc, the contents will be dubbed to the folder. For details, see "Creating folders" (page 51).

- When a receiving disc is the HDD and there is no folder of the same name on it, the recorder automatically makes a folder of the same name on the HDD and dubs contents to it. If a folder cannot be made for the reason that number of folders already reached the limit, etc., contents are dubbed to the ROOT on the HDD.

- When a receiving disc is a DVD-RAM or DVD-R/RW (VR mode) and there is no folder of the same name on it, contents are dubbed to the ROOT on the HDD.

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Creating a DVD-Video using DVD-R/RW

Content stored on the HDD of the recorder can be edited and copied to a DVD-R, a popular media for distribution, and played on a compatible DVD video player. Rewriteable DVD-RW are also available.

Caution

• **Beforehand confirm the content in the disc.**

If you use a DVD-R, prepare a new one. This DVD-Video creation procedure is possible only once per disc on this recorder. Once you have copied to a DVD-R, you cannot redo it, add, delete, or correct the copied contents in the disc. If you start copying then cancel the job, you cannot re-use the DVD-R.

If you use a DVD-RW, be sure to confirm contents in it. This procedure overwrites a whole disc, and all contents in a DVD-RW will be lost. If you want to add contents to a DVD-RW, do not use this procedure. Record directly or make a dubbing to the DVD-RW, then execute the finalization (➡ page 92). This procedure includes the finalizing process, and you will not be able to add, delete, or correct contents to a DVD-RW later, as it will have been finalized. If a finalized DVD-RW has remaining space, you can add contents there if you cancel the finalizing process of the DVD-RW (➡ page 93).

• **Do not start copying to a DVD-R/RW when a programmed recording is scheduled to begin shortly.**

Copying entirely to a DVD-R/RW will take 1 hour and a half (variable depending on the contents). (This does not include time for "Writing Test". This option requires more time. Actual time for "Writing Test" depends on the contents to test, and may be longer than the playing time of the contents if the disc contains too little contents or too many quality and picture settings, etc.)

If a start time of a programmed recording comes during this procedure, the recording is made onto the HDD. However, while making a menu theme, the recording is not executed. Also, programmed recordings to DVD media with "Off" setting of "Relief recording" (➡ page 123) are not executed.

If a programmed recording starts during this procedure, you cannot continue to make one more discs after completion of the first disc.

• **Ensure the compatibility of a disc.**

Refer to the ➡ page 6.
A finalized DVD-RW (Video mode) can be used, but will be initialized.

* Discs made by this procedure will comply with the DVD-Video standard. However, it is not guaranteed to play properly on all DVD video players (including TOSHIBA products).

Depending on the disc, there may be a difference of data capacity between DVD-R and DVD-RW. It may be possible that contents you have just recorded onto a DVD-R cannot be recorded onto a DVD-RW. (DVD-RW capacity may be smaller.)

• **Follow the instructions on handling of the disc.**

■ **Preparation**
• Record contents which you want to copy to DVD-R/RW to make DVD-Video, to the HDD with the following settings:
  - "**DVD compatible mode**" (➡ page 28): "**On (Mode I)**" or "**On (Mode II)**".
• Load a new DVD-R or a DVD-RW. (Follow the instructions on handling of the disc.)
• Press the HDD button to select the HDD mode.

Notes
• If you recorded a title while setting "DVD compatible mode" (➡ page 28) to "Off" or you used another recorder to record a title in a DVD-RAM disc, and you want to copy such a title to a DVD-R/RW to create a DVD-Video, first set "DVD compatible mode" to "On (Mode I)" or "On (Mode II)" then execute the procedure of dubbing (➡ page 87).
• Depending on the disc, DVD-R 4X speed compatibility may be disabled.
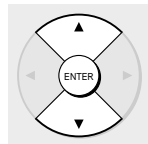
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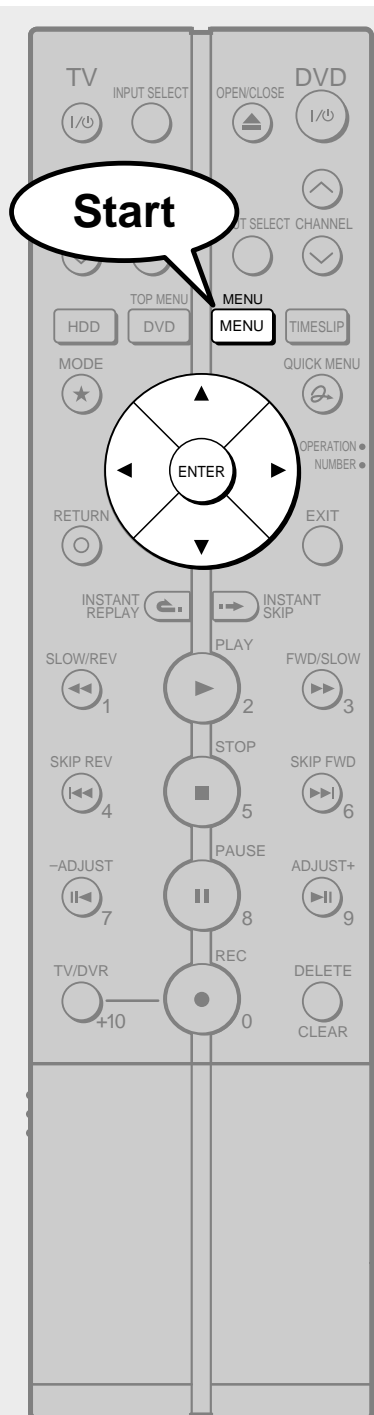
1 **Press MENU.**

The Menu display appears.

MENU
MENU

2 **Press ▲ / ▼ to select "Dubbing", then press ENTER.**
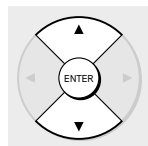
The EDIT MENU Dubbing menu appears.

**3** **Press ▲ / ▼ to select "Create DVD-Video", then press ENTER.**

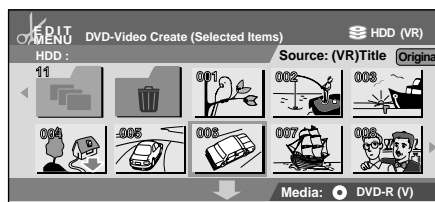The "EDIT MENU DVD-Video Create (Selected Items)" appears.

e.g.

EDIT MENU DVD-Video Create (Selected Items)   HDD (VR)
HDD :   Source: (VR)Title Original
11
001 002 003
004 005 006 007 008
                                    Media: DVD-R (V)
Capacity ▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆   Next

Thumbnails of titles on the HDD are displayed in the upper area.

4 **Press ▲ / ▼ / ◄ / ► to select a part (a title or chapter) to copy to the DVD-R/RW.**
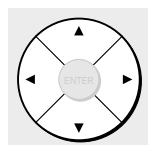
• To go to the preceding or following page, press the SKIP REV (◄◄) or SKIP FWD (►►) button.

• To select a chapter, first select the title that contains the chapter you want, then press the MODE button. To return to the title display, press the MODE button again.

e.g.

EDIT MENU DVD-Video Create (Selected Items)   HDD (VR)
HDD :   Source: (VR)Title Original
11
001 002 003
004 005 006 007 008
                                    Media: DVD-R (V)

(Continued)

Creating a DVD-Video using DVD-R/RW (Continued)
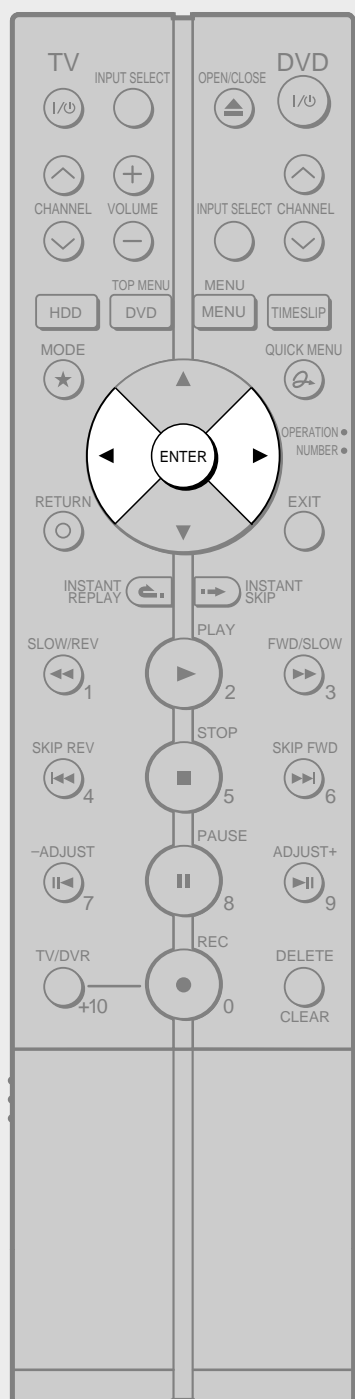
5 Press ENTER.
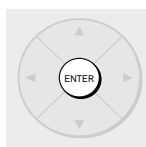
A cursor appears in the lower area (destination media).

e.g.
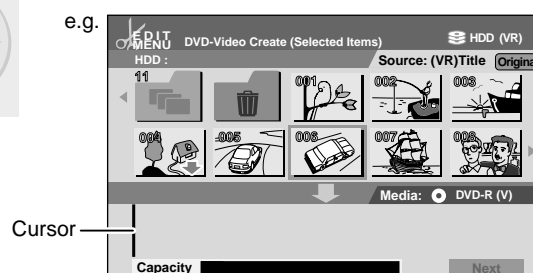
Cursor

6 Press ◄ / ► to select a location to place the selected part, then press ENTER.
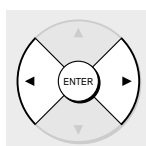
If there are no parts in the lower area, leave the cursor to the left and press the ENTER button.

The selected part is inserted into the location of the cursor.

e.g.

7 Repeat steps 3 to 5.

You can confirm the available volume of a DVD-R/RW on the bar at the bottom of the menu.

Each of the assembled parts is recorded onto the destination media as a title.

• To change the title/chapter name or thumbnail before selection:
1) Select the part that you want to change, and press the QUICK MENU button.
2) Press the ▲ / ▼ buttons to select "Edit title name" or "Modify title thumbnail" to change the title, or "Edit Chapter Name" or "Modify chapter thumbnail" to change the chapter, and press the ENTER button.
3) Use the entry screen to change the title or chapter name.
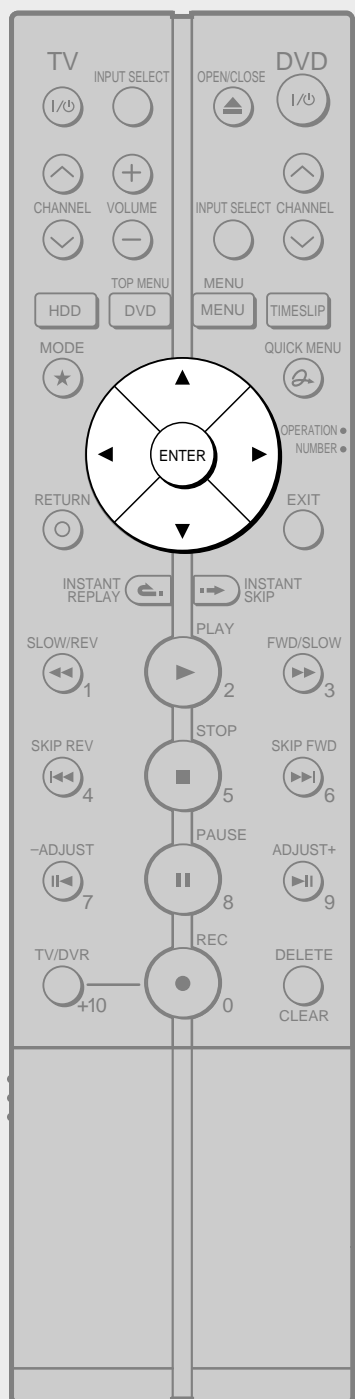
8 Press ▼ to select "Next", then press ENTER.
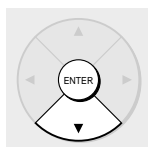
A screen is displayed to select options.

e.g.

EDIT MENU DVD Video Creation(Option Settings)

Menu Create	● Title+Chapter	○ Title	○ Chapter	○ None
Start Play	○ Menu	● Title 1		
After play one title	○ Menu	● Next Title		
After play final title	● Menu	○ Title 1	○ Stop	
Writing Test	● None	○ Parts Test	○ All Test	
Set aspect ratio	● Original	○ 4:3 fixed	○ 16:9 fixed	

Return   Next
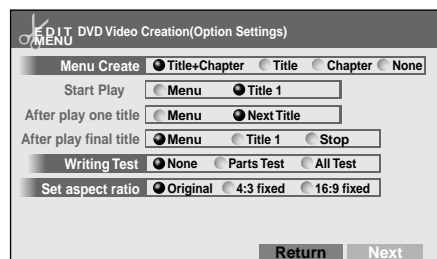
9 Press ▲ / ▼ / ◀ / ▶ to set the items.
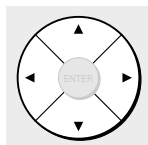
For the instruction of setting, see the description shown at selection.

• When you have selected "Parts Test" or "All Test" for "Writing Test", extra time is required for pre-writing test. "All Test" requires more time than "Parts Test". If a DVD-RW is used, the recorder regards "All Test" selection as "Parts Test" to execute the test.

If you select "None" for "Menu Create":
The setting of "Start Play" and "After play one title" is skipped automatically.

10 Press ▲ / ▼ to select "Next", then press ENTER.
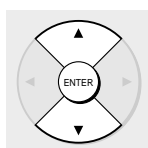
A screen is displayed to confirm the information you are going to write.

e.g.

EDIT MENU DVD Video Creation(Disc Information)

Disc Name
Edit Name

Total title number   **11**

Total time   **1 hour 24 min.**

Return   Next
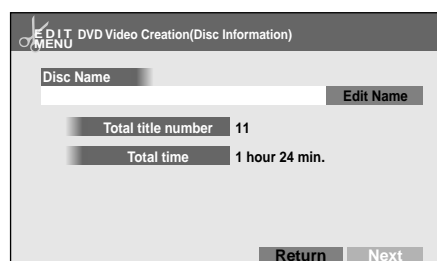
Press the ▲ button to select "Edit Name" and press the ENTER button to go to the character entry screen. The number of characters is limited for the disc name you can enter.

If you selected "None" for "Menu Create" at step 9, select "Writing" on the bottom right corner, and press the ENTER button. Skip to step 15.

(Continued)

Creating a DVD-Video using DVD-R/RW (Continued)
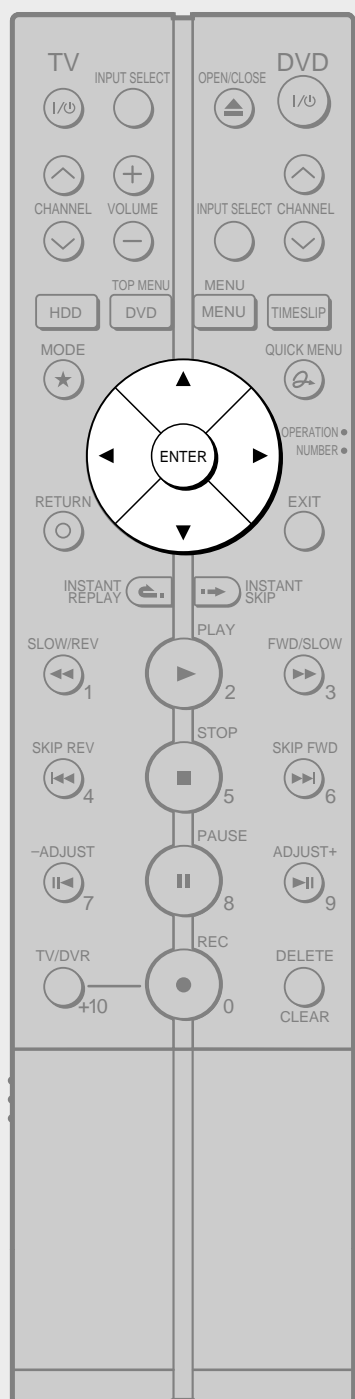
11 Press ▼ to select "Next", then press ENTER.
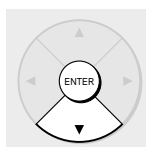
A display of title menu selection appears if "Menu Create" is set to "Title+Chapter" or "Title" at step 9.

To view your captured images (▷ page 104), press SKIP FWD to go to the next page.
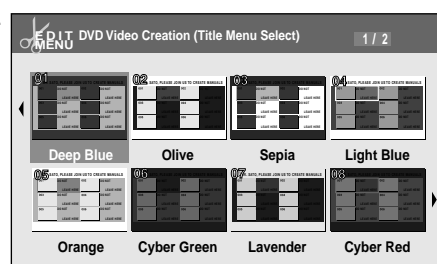
e.g.

EDIT MENU DVD Video Creation (Title Menu Select)			1 / 2
01	02	03	04
Deep Blue	**Olive**	**Sepia**	**Light Blue**
05	06	07	08
Orange	**Cyber Green**	**Lavender**	**Cyber Red**

If you press the MODE button, you can preview the selected menu. To return, press the RETURN button.

While displaying a preview screen of your captured image, you can access the other menu to correct colour (▷ page 105) by pressing the MODE button.

12 Press ▲ / ▼ / ◀ / ▶ to select the menu, then press ENTER.
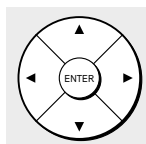
If you have set "Menu Create" to "Title+Chapter" or "Chapter" at step 8, a screen is displayed to select a chapter menu.

13 Press ▲ / ▼ / ◀ / ▶ to select the chapter menu.
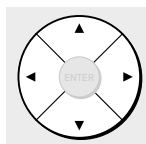
The selected menu is set for all chapters.
You cannot set it for each chapter individually.

If you press the MODE button, you can preview the selected menu. To return, press the RETURN button.

If you press the ▼ button to select "Return" while previewing and press the ENTER button, you will return to the preview of the title menu. To go back to the chapter menu, press the ▲ / ▼ / ◀ / ▶ button to select a number next to "Chapter Menu" on the bottom center.
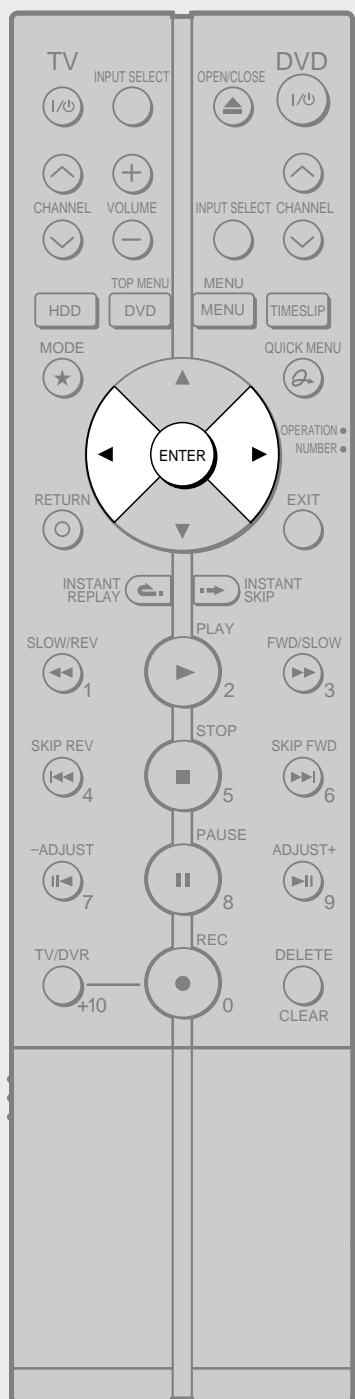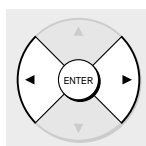
14 Press ENTER on the "EDIT MENU DVD Video Creation (Chapter Menu Select)" display.
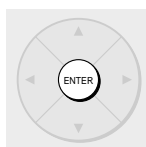
A confirmation message is displayed.

15 Press ◄ / ► to select "Yes", then press ENTER.

The current broadcast picture appears and dubbing starts. The progress is displayed on the screen and in the front panel display on the recorder.

When copying is completed, a finalizing process follows. This enables the disc to be played on a DVD video player.

When the process is completed, a message "Create another DVD-Video now?" appears (except when "Auto power off" (see below) is set). If you select "Yes", you can make one more DVD-R/RW of the same content. If you select "No", you can complete creating the DVD-Video.

• You can set the recorder to turn off automatically when the job finishes.
1) During the job, press the QUICK MENU button.
2) Press the ▲ / ▼ buttons to select "Auto power off".
3) Press the ENTER button.

Creating a DVD-Video using DVD-R/RW (Continued)

Notes

- The number of titles that you can write on a DVD-R/RW (Video mode) is limited (99 titles. Each title should have 99 chapters or less). If you have a large number of titles or chapters, you may not be able to write due to the limitation of the DVD specifications. Also, even if the number of titles and chapters is within the limit, you may not be able to write if you have a large number of menu items.
- Due to standard differences, the number of chapters and their position may change slightly after DVD-Video creation. (For chapters generated on the DVD-R/RW (Video mode), the same thumbnail for the Original chapter is displayed.)
- Due to standard limitation, DVD-R/RW (Video mode) may contain unnecessary scenes after creation.
- If you select items of various types of video outputs, aspect ratios or other properties, or if you select an item recorded with different settings, they may be divided into titles. (For titles generated on the DVD-R/RW (Video mode), the same thumbnail for the Original title is displayed).
- Content based on a complicated Playlist or composed of too many items may not be copied properly.
- Copy-once permitted contents cannot be copied to a DVD-R/RW (Video mode), even if they are recorded onto the HDD while "DVD compatible mode" is set to "On (Mode I)" or "On (Mode II)" (page 28).
- Content recorded on a recorder other than this recorder (including TOSHIBA products) cannot be copied to a DVD-R/RW (Video mode) using High speed dubbing. First set "DVD compatible mode" to "On (Mode I)" or "On (Mode II)", then perform "Change quality dubbing" (page 90) to copy the disc contents to the HDD.
- When a content is recorded with manual rate 1.0 Mbps or 1.4 Mbps and is including a 16:9 picture shape scene, the DVD creation of the content may failure. In this case, set "Set aspect ratio" to "4:3 fixed" on the menu "(Option Settings)".
- Even if the title is recorded with "DVD compatible mode" set to "On (Mode I)" or "On (Mode II)", using a recorder other than this may cause failure when recording to a DVD-R/RW.
- If the DVD-R creating fails to be completed, most of the discs cannot be used again.
- If an error occurs while a DVD-Video is created, the error code "ERR**" (** indicates the error code) is shown in the front panel display of the recorder. (page 133) To clear this display, press the DISPLAY button.
- There may be a difference between a specified thumbnail of menu in the DVD-Video creation procedure and the one on displayed in the "CONTENT MENU".

■ **Using a favorite scene as a menu**

You can select favorite scenes from the recorded contents and use them as menus of DVD-Video Created (page 98) DVD-R/RW.

1) **During stop or playback, press HDD or DVD to select the drive.**

2) **Press ▲ / ▼ / ◄ / ► to select a title which contains a scene to use as menus.**

3) **Press QUICK MENU.**

4) **Press ▲ / ▼ to select "Edit function", then press ENTER.**

5) **Press ▲ / ▼ to select "Save captured images", then press ENTER.**

6) **Select a scene.**
   Locate a scene using the buttons such as PLAY, SLOW/REV, FWD/SLOW, ADJUST or PAUSE, etc.

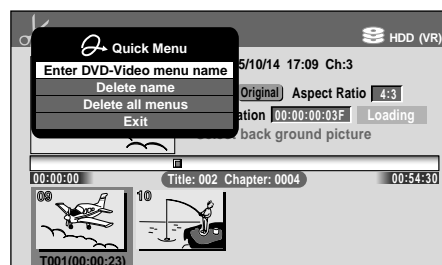7) **Press ▲ / ▼ to select "Loading" and press ENTER.**

e.g.
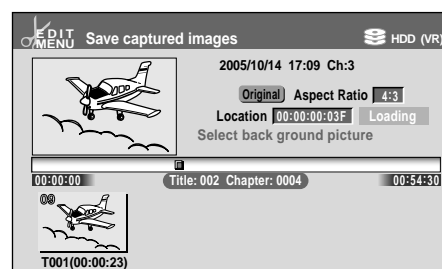
Note
- You cannot capture copy-protected contents.
- The maximum number of pictures which can be saved varies depending on the data size.

● **To name a captured image**
Press ▲ / ▼ / ◄ / ► to select an image to name then press QUICK MENU. Press ▲ / ▼ to select "Enter DVD-Video Menu Name" then press ENTER.

e.g.

The on-screen keyboard appears.
Enter a name.

● **To delete a captured image**
Press ▲ / ▼ / ◀ / ▶ to select an image to delete then press QUICK MENU. Press ▲ / ▼ to select "Delete Menu" then press ENTER. Follow the message to operate.

To delete all captured images, select "Delete all Menus".

■ **Cancelling selection of an item**

1) **Press ▲ / ▼ / ◀ / ▶ to select an item then press QUICK MENU.**
The Quick Menu appears.

e.g.
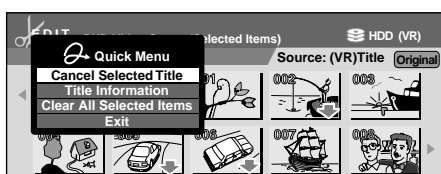
2) **Press ▲ / ▼ to select "Cancel Selected Title" (or "Clear All Selected Items" for cancelling selection of all items at a time).**

3) **Press ENTER.**
The selected item disappears.

■ **Selecting colour options on menus**
Several options are available: a translucent background for better legibility, character colour and cursor colour selections.
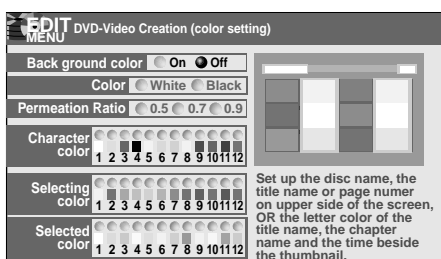
1) **At step 11 (▷ page 102), go to the next page and select a captured image by ▲ / ▼ / ◀ / ▶, then press MODE.**
The preview screen appears.

2) **Press MODE.**
A colour setting display appears.

e.g.

3) **Set each item by ▲ / ▼ / ◀ / ▶, referring to the guidance on the right half of the display, finally press RETURN to exit.**
The preview screen returns.

■ **If a message appears while selecting a part**
You may receive a message, such as "Selection of Writing Test in the next option setting is recommended to check whether Aspect Ratio coexists". If a copy-prohibited content is included, or if the aspect ratio is changed meanwhile, cancel the selection. If you are not sure, select "Writing Test" ("Parts Test" or "All Test").

Note
• Depending on selection or condition of items, copying may result in failure. If a message appears, be sure to, prior to step 8, press the QUICK MENU button. Then press the ▲ / ▼ buttons to select "Cancel selected title", and press the ENTER button. If you do not do this and continue the copying process, an error may occur and the disc will be rendered useless.

● **Playing a created DVD-Video**

You can play the DVD-R/RW (Video mode) in the same manner as you would play a DVD video disc.
See ▷ page 56.

■ **If you want to correct the contents of a DVD-RW (Video mode) after the DVD-Video creation procedure**
Cancel the finalization of the DVD-RW (Video mode) (▷ page 93).
It is possible only on DVD-RW (Video mode) recorded on this recorder.
After cancelling, you can delete titles. However, you cannot re-use the whole disc, since only the last title can restore the disc space.

■ **If you want to delete all contents of a DVD-RW (Video mode) after the DVD-Video creation procedure**
Load the DVD-RW into the recorder and initialize it, then execute the procedure of DVD-Video creation (▷ page 98).

Other editing functions

Changing the picture on CONTENT MENU

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

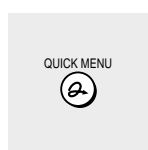**You can register your favorite scene as a thumbnail displayed on the "CONTENT MENU".**
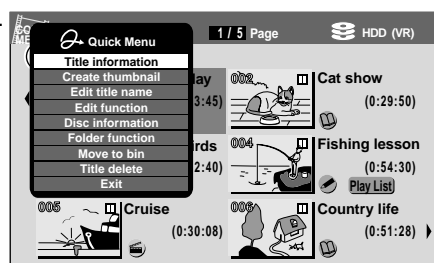**On a finalized DVD-R/RW disc, this feature is not available.**

Start
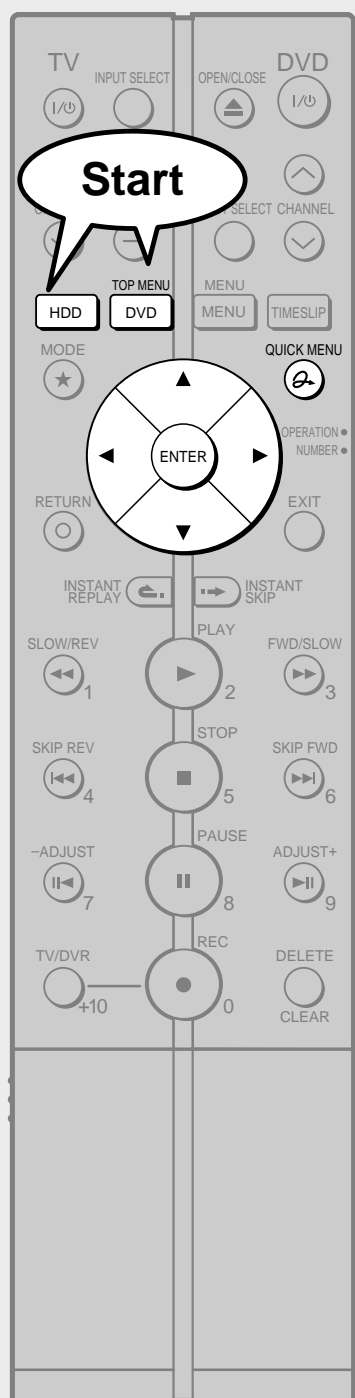
1 Press HDD or DVD, then press ▲ / ▼ / ◄ / ► to select a title.

2 Press QUICK MENU.

The Quick Menu appears.

e.g.

Quick Menu · 1 / 5 Page · HDD (VR)
- Title information
- Create thumbnail
- Edit title name
- Edit function
- Disc information
- Folder function
- Move to bin
- Title delete
- Exit

002 Cat show (0:29:50)
004 Fishing lesson (0:54:30) Play List
005 Cruise (0:30:08)
006 Country life (0:51:28)

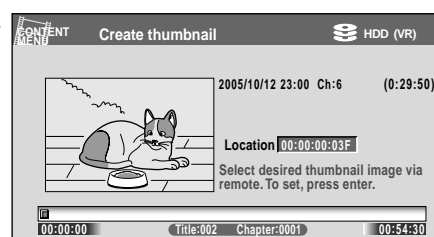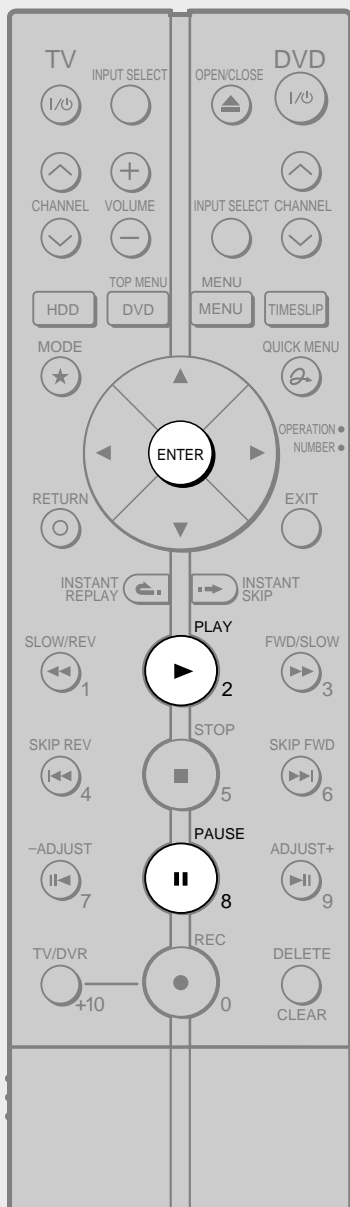**3** Press ▲ / ▼ to select "Create thumbnail" (or "Create CHP thumbnail" if selected a chapter at step 1), then press ENTER.

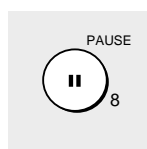The "CONTENT MENU Create thumbnail" display appears.

e.g.

CONTENT MENU Create thumbnail · HDD (VR)
2005/10/12 23:00 Ch:6 (0:29:50)
Location 00:00:00:03F
Select desired thumbnail image via remote. To set, press enter.
00:00:00 Title:002 Chapter:0001 00:54:30

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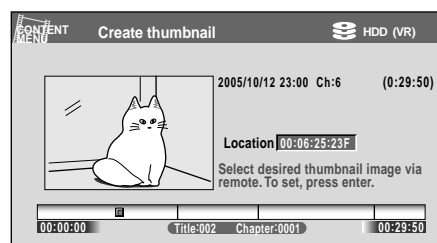
Others
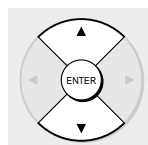
4 **Press PLAY to start playback.**

PLAY
2

Locate a scene you want to capture as a thumbnail.
You can use the following buttons.
SLOW/REV, FWD/SLOW, SKIP REV, SKIP FWD,
PAUSE, ADJUST, etc.

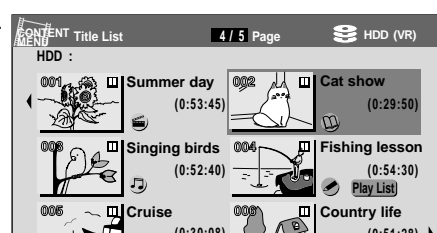**5** **At the point where you want to capture a thumbnail image, press PAUSE.**

PAUSE
8

e.g.

CONTENT MENU | Create thumbnail | HDD (VR)

2005/10/12 23:00 Ch:6 (0:29:50)

Location 00:06:25:23F
Select desired thumbnail image via remote. To set, press enter.

00:00:00 Title:002 Chapter:0001 00:29:50

6 **Press ENTER.**

ENTER

The "CONTENT MENU" returns. The selected scene is displayed as a thumbnail.

e.g.

CONTENT MENU | Title List | 4 / 5 Page | HDD (VR)

HDD :

001 Summer day (0:53:45)
002 Cat show (0:29:50)
003 Singing birds (0:52:40)
004 Fishing lesson (0:54:30) Play List
005 Cruise (0:30:08)
006 Country life (0:51:28)

Notes
- There may be a small difference between a thumbnail made on the "Create thumbnail" display and that displayed in the "CONTENT MENU". Operation with the SLOW/REV or FWD/SLOW buttons may extend the difference.
- You cannot create thumbnails of chapters in a title that contains a still picture.
- If you create a chapter thumbnail, and then record or edit the disc on other devices, the chapter thumbnail may return to the top of the chapter.

Other editing functions (Continued)

Combining two titles (Original) into one

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

Use this feature to combine two titles into one. The second title is deleted as the second title is added to the end of the first title.

Start
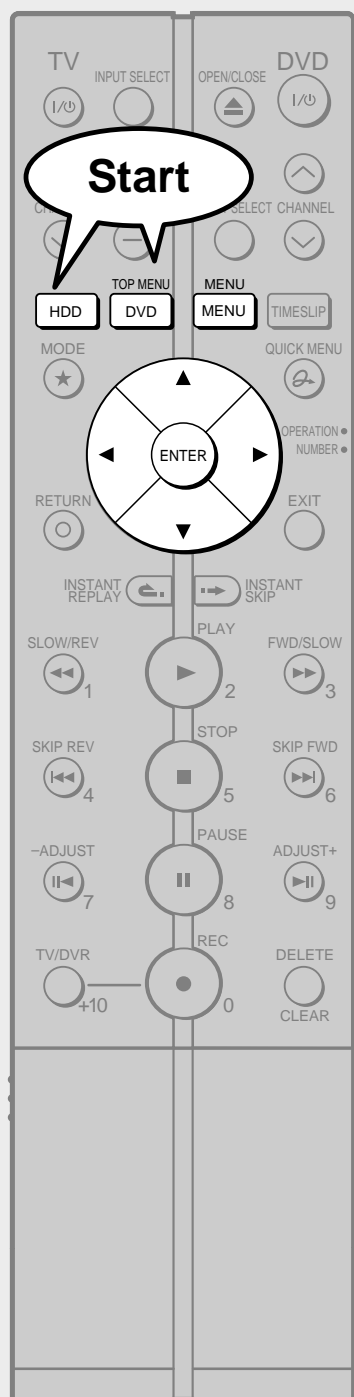
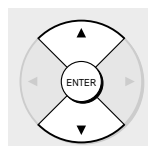**1** **Press HDD or DVD to select a disc that contains titles or chapters you want to merge.**

2 **During playback or stop, press MENU.**

3 **Press ▲ / ▼ to select "Edit programme", then press ENTER.**
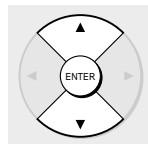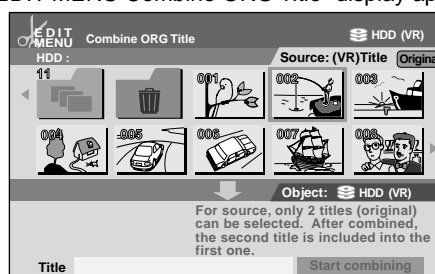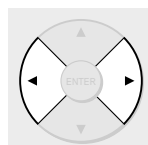
The "EDIT MENU Main Menu" appears.

4 **Press ▲ / ▼ to select "Combine titles", then press ENTER.**

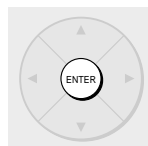The "EDIT MENU Combine ORG Title" display appears.
e.g.

EDIT MENU Combine ORG Title   HDD (VR)
HDD :   Source: (VR)Title Original
11
001 002 003
004 005 006 007 008
                                   Object: HDD (VR)
For source, only 2 titles (original)
can be selected. After combined,
the second title is included into the
first one.
Title   Start combining

5 **Press ◄ / ► to select the first title to merge.**
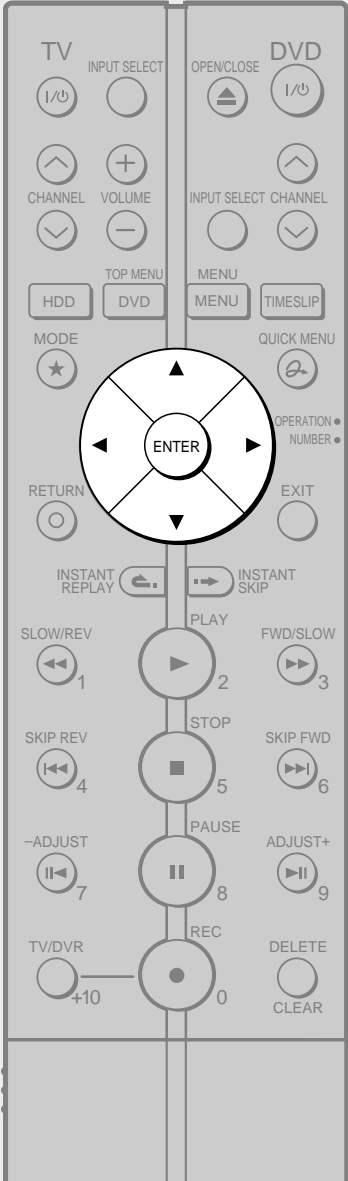
Press SKIP REV (|◄◄) or SKIP FWD (►►|) button to move to the previous or next page.

6 **Press ENTER.**

The cursor appears in the lower area of the screen (the title to merge to).

004 005 006 007 008
                                   Object: HDD (VR)
Cursor —   For source, only 2 titles (original)
can be selected. After combined,
the second title is included into the
first one.
Title   Start combining

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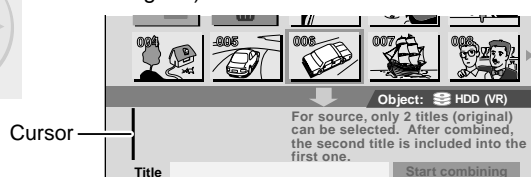
7 **Press ◄ / ► to select the location to put the part and press ENTER.**

It is fixed at the left side at the beginning. Press ENTER button. The selected part moved into the location of the cursor.
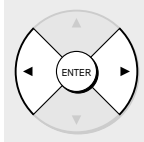
e.g.

EDIT MENU Combine ORG Title   HDD (VR)
HDD :   Source: (VR)Title Original
11
001   002   003
004   005   006   007   008
                                    Object: HDD (VR)
008   For source, only 2 titles (original)
001   can be selected. After combined,
                       the second title is included into the
                       first one.
Title   Start combining

8 **Perform steps 5 to 7 and select the second title.**

You cannot select the same title.

To cancel the registered part:
1) Select the part that you want to cancel, and press QUICK MENU button to display the Quick Menu.
2) Press ▲ / ▼ buttons to select "Cancel Selected Title" (or "Clear All Selected Items" for cancelling the selection of multiple items at a time).
3) Press ENTER button.

9 **Press ▲ / ▼ to select "Start combining" and press ENTER, then select "Yes" and press ENTER.**

The combining process starts.

Notes
• You cannot stop the combining process after it has started.
• You cannot combine titles if their length will exceed 8 hours.
• You cannot combine a protected title or a title containing still pictures.
• The title name of the first title is given to the title after combining.
• The second title is combined into the first title, maintaining the chapter divisions and chapter names.
• Titles and chapters show their names for about 2 seconds at the bottom of the screen when they are selected.
• If you combine titles in folders, the new title will be created in the first folder.

Other editing functions (Continued)

■ **Discs and editing functions**

Available editing functions may differ depending on the disc,

	HDD	DVD-RAM	DVD-RW[4]		DVD-R[4]	
			VR mode	Video mode	VR mode[3]	Video mode
Dividing into chapter	Yes[1]	Yes[1]	Yes[1]	Yes[2]	Yes	Yes[2]
Deleting titles or chapter	Yes[1]	Yes[1]	Yes[1]	No	Yes	No
Merging chapters	Yes[1]	Yes[1]	Yes[1]	No	Yes	No
Combining tltles (Original)	Yes[1]	Yes[1]	Yes[1]	No	Yes	No
Editing a Playlist	Yes[1]	Yes[1]	Yes[1]	No	Yes	No

[1] Most suitable.
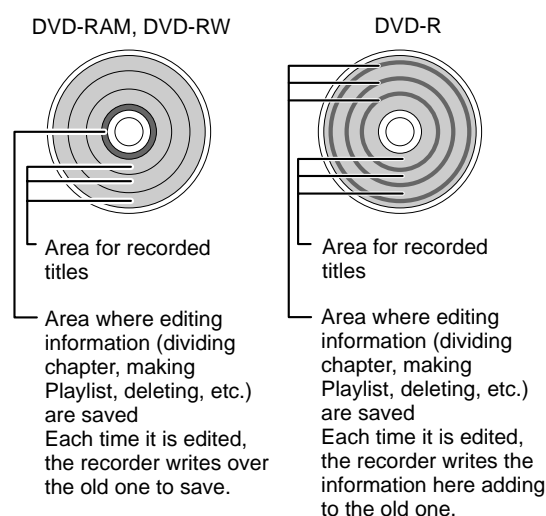[2] You can create chapters in DVD-R/RW (Video mode) only while recording.
[3] There is a limit in the number of times DVD-R (VR mode) can be edited.
[4] Unfinalized DVD-R/RW only. (Finalized DVD-R/RW cannot be edited.)

■ **On editing of DVD-R (VR mode)**

You can create chapters and make a Playlist using recorded contents in DVD-R (VR mode), as well as DVD-RAM or DVD-RW (VR mode). However, DVD-R (VR mode), different from DVD-RAM or DVD-RW (VR mode), has a limit in the number of times it can be edited, depending on the remaining disc space or the number of times of loading.
Additionally, DVD-R (VR mode) cannot restore the disc space even after recorded content is deleted.

DVD-RAM, DVD-RW   DVD-R

Area for recorded titles

Area where editing information (dividing chapter, making Playlist, deleting, etc.) are saved
Each time it is edited, the recorder writes over the old one to save.

Area for recorded titles

Area where editing information (dividing chapter, making Playlist, deleting, etc.) are saved
Each time it is edited, the recorder writes the information here adding to the old one.

■ **Number of times of DVD-R (VR mode) editing**

The number of times of DVD-R (VR mode) depends on the remaining disc space. If the disc has little space, a message appears when it is loaded, and tells you that there are only a few times of editing left.
The number is consumed each time of creating chapters or flashing of "Loading" icon.
Disc finalizing is available even on a disc can no longer be edited.
Finalizing of DVD-R, different from on DVD-RW, cannot be cancelled once executed even if there is remaining space in the disc,

■ Editing/dubbing of copy-once content

Some programmes may contain copy control signals to restrict recording only once for the purpose of protecting the copyright owners. (Copy-once content) To record these programmes on this recorder, comply with the following restrictions.

■ Copy-once content, recorded on the HDD cannot be copied to DVD-R/RW (Video mode).

DVD-R/RW (Video mode) format cannot record copy-once content. To save these contents, load a CPRM compatible DVD-RAM or DVD-R/RW (VR mode) and move them to it.

■ Copy-once content, recorded on a DVD disc cannot be moved to the HDD.

Once recorded, copy-once content cannot be copied again. The only option left is moving from the HDD to a DVD-RAM or DVD-R/RW. Moving from a DVD disc to the HDD is not permitted.

■ Copy-once content, recorded on a DVD disc cannot be played on a PC.

Once recorded, copy-once content cannot be copied again. DVD standard saves the data by the copy protection system, called CPRM. A PC is required to be equipped with CPRM compatible playback software program and CPRM compatible disc drive to play a DVD disc which contains copy-once content.

■ Copy-once content takes more time to display thumbnails on CONTENT MENU or EDIT MENU.

Once recorded, copy-once content cannot be copied again. The recorder does not store thumbnails of copy-once content, different from normal content. Therefore, each time a menu is opened the recorder searches thumbnails among recorded titles. This is the reason why it takes more time to display thumbnails of copy-once content.
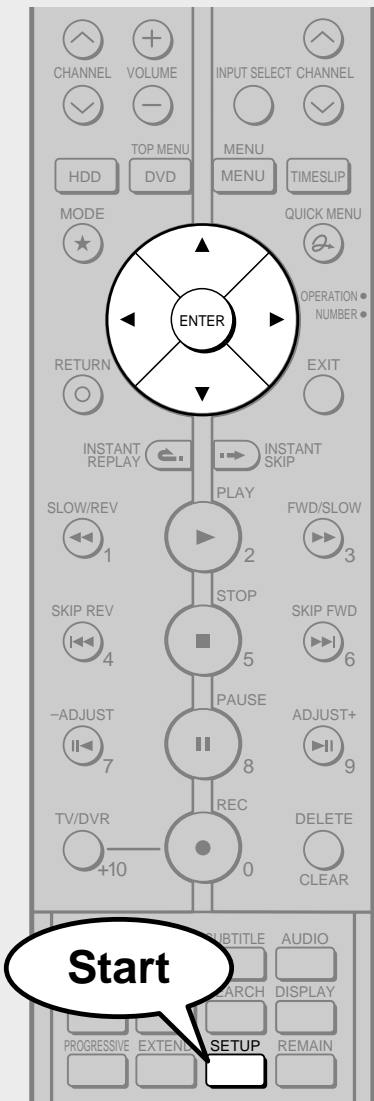
Function Setup

You can change the default settings to customize performance to your preference.

● **Customizing the function settings**

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) | DVD-VIDEO | VCD | CD |

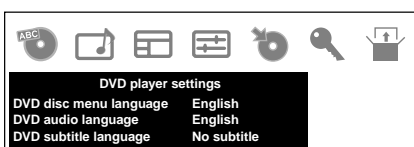# Customizing the function settings

You can change the default settings to customize performance to your preference.

1 Press SETUP in the lid.

SETUP

The following setup display appears.

e.g.

DVD player settings
DVD disc menu language   English
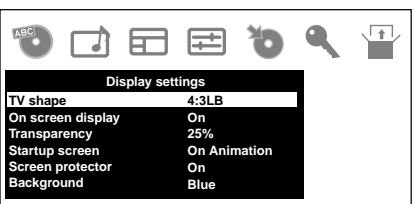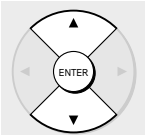DVD audio language   English
DVD subtitle language   No subtitle

It can be displayed by selecting "Other settings" on the Menu.

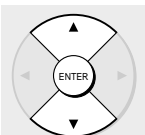**2 Press ◄ / ► to select the icon of a group that contains a desired item, then press ENTER.**

For details on each setting, see the next page.

e.g. When "Display settings" is selected:

e.g.

Display settings
TV shape   4:3LB
On screen display   On
Transparency   25%
Startup screen   On Animation
Screen protector   On
Background   Blue

3 Press ▲ / ▼ to select a desired item, then press ENTER.

4 Refer to the explanations on pages beginning from 115, to change the selection by ▲ / ▼ or other buttons, then press ENTER.

- To select another item in the same group, repeat steps 3 to 4.
- To shift to another group, press the RETURN button then repeat steps 2 to 4.

5 Press SETUP.

SETUP

The setup display disappears and the setting is completed.

Start

Notes
- The SETUP button can function even during normal playback. However some items may be grayed out and they cannot be selected. In this case, try again after playback is stopped.
- The SETUP button does not function during recording, Recorded Title Play, Chase Play or Pause TV modes.

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DVD player settings

DVD disc menu language

HDD DVD-RAM DVD-RW (VR) DVD-RW (Video) DVD-R (VR) DVD-R (Video)
DVD-VIDEO VCD CD

Selects a preferred language for disc menus.

English:
To display disc menus in English.

French:
To display disc menus in French.

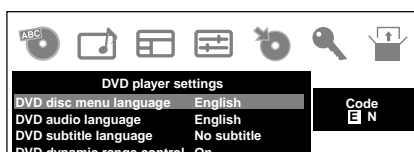**German:**
To display disc menus in German.

Spanish:
To display disc menus in Spanish.

Others:
To make a further language choice.
After pressing the ENTER button, follow steps 1) – 4) below.

e.g.

```
ABC  ♪  ⊟  ⊞  🎬  🔑  ⬆

         DVD player settings
DVD disc menu language    English        Code
DVD audio language        English        E N
DVD subtitle language     No subtitle
DVD dynamic range control On
```

1) **Obtain the language code of the preferred language from the Language code list (⇨ page 135).**

2) **Select the first character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

3) **Press the ◄ / ► buttons to shift. Select the second character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

4) **Press the ENTER button.**

Note
• Some DVD video discs may not include your preset language. In this case, the recorder automatically displays disc menus consistent with the disc's initial language setting.

DVD audio language

HDD DVD-RAM DVD-RW (VR) DVD-RW (Video) DVD-R (VR) DVD-R (Video)
DVD-VIDEO VCD CD

Selects a preferred language for the sound track.

English:
To play sound tracks recorded in English.

French:
To play sound tracks recorded in French.

German:
To play sound tracks recorded in German.

Spanish:
To play sound tracks recorded in Spanish.

Others:
To make further choices.
After pressing the ENTER button, follow steps 1) - 4) below.

e.g.

```
ABC  ♪  ⊟  ⊞  🎬  🔑  ⬆

         DVD player settings
DVD disc menu language    English        Code
DVD audio language        English        E N
DVD subtitle language     No subtitle
DVD dynamic range control On
Karaoke vocal             Off
```

1) **Obtain the language code of the preferred language from the Language code list (⇨ page 135).**

2) **Select the first character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

3) **Press the ◄ / ► buttons to shift. Select the second character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

4) **Press the ENTER button.**

Note
• Some DVD video discs may be played in a different language from that you selected. A prior language may be programmed by the disc.

DVD subtitle language

HDD DVD-RAM DVD-RW (VR) DVD-RW (Video) DVD-R (VR) DVD-R (Video)
DVD-VIDEO VCD CD

Selects a preferred language for subtitles.

English:
To display subtitles in English.

French:
To display subtitles in French.

German:
To display subtitles in German.

Spanish:
To display subtitles in Spanish.

(Continued)

Customizing the function settings (Continued)
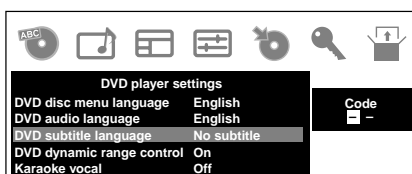
No subtitle:

To disable subtitles.

Others:

To make a further choice.
After pressing the ENTER button, follow steps 1) – 4) below.

e.g.

DVD player settings	
DVD disc menu language	English
DVD audio language	English
DVD subtitle language	No subtitle
DVD dynamic range control	On
Karaoke vocal	Off

Code
□ –

1) **Obtain the language code of the preferred language from the Language code list (⇨ page 135).**

2) **Select the first character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

3) **Press the ◄ / ► buttons to shift. Select the proceeding character by pressing the ▲ / ▼ buttons (or the ADJUST button).**

4) **Press the ENTER button.**

Notes
• Some DVD video discs may be set to display subtitles in a different language from that you selected. A prior subtitle language may be programmed by the disc.
• Some DVD video discs allow you to change subtitle selections only via the disc menu. In this case, press the DVD button and choose the appropriate subtitle language from the selection on the disc menu.

DVD dynamic range control

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns on or off a function that makes faint sounds easier to hear even if you lower the volume during late-hour playback.

Off:

The DVD dynamic range control does not function.

On:

The DVD dynamic range control functions.

Notes
• This function is available only for a disc recorded in Dolby Digital format.
• Depending on the disc you play back, the actual effect of this function differs.

Karaoke vocal

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns on or off the vocal output during DVD KARAOKE disc playback.

Off:

The main vocal sound is not output.

On:

The main vocal sound is output.

Notes
• This function is available only for a DVD KARAOKE disc recorded in Dolby Digital Multi Channel format.
• If you want to enjoy the KARAOKE function, connect an amplifier or other such device to this recorder.

DVD parental lock

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns the parental lock function on or off.
DVD video discs equipped with the Parental Lock function have a predetermined limitation level. The limitation level or limitation method may differ depending on the disc. For example the total disc may not be played back, or an extreme violent scene maybe cut or replaced automatically by another scene.

Important
• Depending on discs, it may not be evident whether the disc is compatible with the Parental Lock function. Make sure that the Parental Lock function you set is activated correctly.

On:

Select this to activate the Parental Lock function or to change the setting.
After pressing the ENTER button, follow steps 1) – 3) below.

Off:

Deactivates the Parental Lock function.
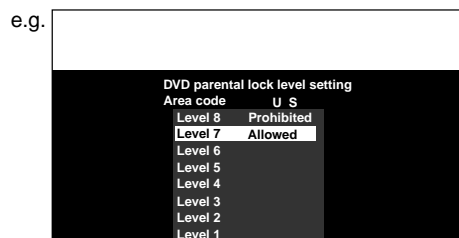After pressing the ENTER button, follow steps 1) below.

1) **Set the OPERATION/NUMBER switch to "NUMBER", then enter a 4-digit security code by using the number buttons, then press the ENTER button.**

If you make a mistake entering your security code, press the CLEAR button before pressing the ENTER button, and re-enter the correct security code.

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2) **Press the ▲ / ▼ / ◄ / ► buttons to move the cursor. Then press the ADJUST button to enter the code of a country/area whose standards were used to rate the DVD video disc, referring to the following list.**

Country/Area	Code
AUSTRALIA	AU
BELGIUM	BE
CANADA	CA
CHINA	CN
CHINA HONG KONG	HK
DENMARK	DK
FINLAND	FI
FRANCE	FR
GERMANY	DE
INDONESIA	ID
ITALY	IT
JAPAN	JP
MALAYSIA	MY
NETHERLANDS	NL
NORWAY	NO
PHILIPPINES	PH
RUSSIAN FEDERATION	RU
SINGAPORE	SG
SPAIN	ES
SWEDEN	SE
SWITZERLAND	CH
TAIWAN	TW
THAILAND	TH
UNITED KINGDOM	GB
UNITED STATES	US

3) **Select the desired limitation level by pressing the ▲ / ▼ buttons, and then press the ENTER button.**

e.g.

DVD parental lock level setting
Area code   U S
Level 8   Prohibited
Level 7   Allowed
Level 6
Level 5
Level 4
Level 3
Level 2
Level 1

Unless the Parental Lock function is set to "Off", a disc that has a higher limitation level than your selected limitation level cannot be played back. For example, if you select level 7, discs exceeding level 8 are locked and cannot be played back.

When "US" is selected, its limitation level corresponds to the following settings.

Level 7 : NC-17   Level 3 : PG
Level 6 : R   Level 1 : G
Level 4 : PG13

■ **To change the limitation level of the Parental Lock function**

Follow step 1) - 3) above.

■ **To change the security code**

1) **Press the STOP button 4 times after selecting "On" and "Off" in order, and then press the ENTER button.**

The security code is cleared.

2) **Set the OPERATION/NUMBER switch to "NUMBER", then enter a new 4-digit security code by using the number buttons.**

3) **Press the ENTER button.**

DVD title stop

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns on or off a feature that automatically stops playback after a title has been viewed.
This function is unavailable on DVD-R/RW discs (VR mode).

Off:
Plays back all following titles on the disc after the current title has been viewed.

On:
Recorder is stopped after playback of current title being viewed is completed.

Customizing the function settings (Continued)

Picture/Audio settings

PAL/Auto

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Selects the video system of a disc.

PAL:

To play a PAL disc. Connect a PAL TV to view a picture.

Auto:

The recorder automatically identifies PAL or NTSC video system of a disc. Connect a multisystem TV (PAL/NTSC compatible) to view a picture.
A playback picture may be distorted when detected a signal change between PAL and NTSC on the disc.

Note:

Alert message is displayed when detected both PAL and NTSC video system on the same disc.

Custom picture select

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

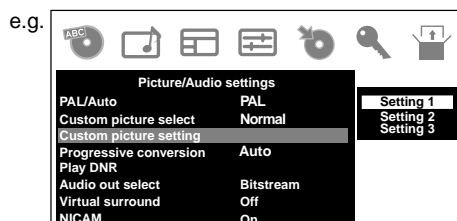Selects from between 4 picture settings (Normal, Setting 1-3) you stored in the memory.
During dubbing with "Change quality" set or dubbing to the HDD it will be set to Normal.

Custom picture setting

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

You can adjust fine picture quality and store up to 3 custom picture settings in the memory of the recorder.

1) **Press the ▲ / ▼ button to select a desired setting from 3 settings, and then press the ENTER button.**

e.g.

Picture/Audio settings		
PAL/Auto	PAL	Setting 1
Custom picture select	Normal	Setting 2
Custom picture setting		Setting 3
Progressive conversion	Auto	
Play DNR		
Audio out select	Bitstream	
Virtual surround	Off	
NICAM	On	

2) **Press the ▲ / ▼ buttons to select adjustable items, and then press the ◄ / ► buttons to select each parameter.**

Brightness

(0) Darker ⇔ Brighter (14)

Contrast

(–7) Lower ⇔ Higher (7)

Color

(–7) Duller ⇔ Brighter (7)

Edge enhance

Soft (ON) ⇔ Off (normal) ⇔ Sharp (ON)

Gamma Level

off ⇔ 1 ⇔ 2
To adjust Gamma Level when the picture is too dark to view.

3) **After adjusting the items, press the ENTER button.**

Progressive conversion

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Selects the system of output signal. (Only when connected to a PROGRESSIVE TV.)
There are two types of source content in pictures recorded in DVD video discs: film content (pictures recorded from films at 24 frames per second) and video content (video signals recorded at 25 frames in PAL (30 frames in NTSC) per second). Make this selection according to the type of content being viewed.

Auto:

Select this position normally.
The recorder automatically detects source content, film or video, of playback source, and converts that signal in the progressive output format in an appropriate method.

Video:

The recorder filters video signal, and converts it in the progressive output format appropriately.
Suitable for playback of video content pictures.

Film:

The recorder converts film content pictures in the progressive output format appropriately.
Suitable for playback of film content pictures.
The progressive output feature will be most effective under this selection.

Note
• Depending on the disc, pictures may be cut off or doubled.

Play DNR

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Selects a setting for playback at a reduced noise level. Press the ▲ / ▼ buttons to select an item then select "On" or "Off" using the ◄ / ► buttons.

3D-DNR:

Off:
Not activated.

On:
Reduces the noise levels of brightness signals and color signals present in the video signal during playback.

Mosquito NR:

Off:
Not activated.

On:
Reduces mosquito (flicker) noise occurring in the contour sections of images.

Block NR:

Off:
Not activated.

On:
Reduces noise that appears in the form of blocks (block noise) in a portion of the screen during playback of images with rapid movement.

DNR is the abbreviation for Digital Noise Reduction.

Notes
- DNR effects vary depending on the disc.
- Detailed images may no longer be visible depending on the scene due to the effects of DNR.
- Depending on the disc or scene, "On" may produce undesirable picture artifacts or increase noises on contours. In this instance, select "Off."
- While you are using the zoom feature, "DNR" does not function.

Audio out select

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Selects an output sound format corresponding to your audio system connection.

For details about output sound selection, see ⇨ page 132.

Bitstream:
Select this when an amplifier equipped with built-in Dolby Digital, DTS, MPEG1 or MPEG2 decoder is connected to this recorder.
When you play back a disc recorded in Dolby Digital, DTS, MPEG1 or MPEG2 format, digital audio signal is

PCM:
Select this when a 2ch digital stereo amplifier is connected to this recorder. When you play back a disc recorded in Dolby Digital, MPEG1 or MPEG2 format, the sound is converted to the PCM (2ch) format and output.

Virtual surround

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

This lets you play discs with acoustic effects having greater depth and presence even when using only two speakers.

Off:
Virtual surround effect not activated.

On:
Virtual surround effect activated.

Notes
- This function is only activated when playing back a disc recorded with Dolby Digital.
- This function is only activated when "Audio Out Select" is set to "PCM" if the DIGITAL AUDIO OUT COAXIAL jack of this DVD recorder is connected to an amplifier or similar device.
- When the virtual surround effect is activated, Dolby Progressive Sound may be deactivated or sound differently than usual.
- When the virtual surround effect is activated, the volume may sound differently than usual.
- Set "Virtual surround" to "Off" if the audio sounds distorted.

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NICAM

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Selects a sound type for NICAM programme. NICAM programmes are divided into 3 types. NICAM Stereo, NICAM Mono and Mode I/Mode II (transmission in another language). NICAM programmes are always accompanied by a standard mono sound broadcast and you can select the desired sound on the screen (for recording).

Off:
Only set at this position to record the standard mono sound during a NICAM broadcast if the stereo sound is distorted due to inferior reception conditions.

On:
Normally set at this position.

Customizing the function settings (Continued)

Display settings

TV Shape

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Selects a picture size according to the aspect ratio of your TV.

For details on this setting, see "TV shape setting" (⇨ page 36, "INSTALLATION GUIDE").

On screen display

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns on or deactivate the operational status display (e.g., ▶) on the TV screen.

Off:
Deactivates the operational status display (e.g., ▶) on the TV screen.

On:
Activates the operational status display (e.g., ▶) on the TV screen.

Transparency

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Selects the transparency of the GUI and its relationship to the background image.

0% : 25% : 50%

Startup screen

Turns on or off the start-up screen setting that makes the background picture appear automatically when turning on the power.

Off:
The startup screen is not displayed.

On: Animation
The startup screen appears automatically when turning on the power.

On: menu
The Menu screen appears automatically when turning on the power.

Screen protector

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Turns the screen saver on or off.
To reduce TV screen damage (image burn), this function disengages the pause mode of a playback image. The display returns to the normal TV screen when the recorder remains idle for more than 15 minutes. In time slip mode, the playback pause is released.

If this function is set to "On", the recorder, if freezes, may return to the normal by leaving it for about 15 minutes or longer.

Off:
Deactivates the screen protector function.

On:
Activates the screen protector function.

Note
• Toshiba does not guarantee that this function protects the TV screen by all means.

Background

Selects a screen colour when receiving no video signals such as selecting a non-broadcasting channel.

Off:
No colour.

Black:
Black is displayed.

Blue:
Blue is displayed.

Important
• Depending on signal reception, the Background setting may be cleared. To prevent this, set this function to "Off".

Operational settings

IR code

Switches the codes to operate the recorder. If you use the second and third TOSHIBA HDD/DVD video recorders, set the different remote codes for each recorder to avoid confusion in the response of the recorders.

For details about this setting, refer to "Operating the second and third TOSHIBA HDD/DVD video recorders with the remote control of this recorder" (⇨ page 40, "INSTALLATION GUIDE").

DR 1 : DR 2 : DR 3

Instant skip interval

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Sets how much time is skipped when the INSTANT SKIP button is pressed.

5 sec. : 10 sec. : 30 sec. : 5 min.

Instant replay interval

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Sets how far back is replayed when the INSTANT REPLAY button is pressed.

5 sec. : 10 sec. : 30 sec. : 5 min.

Title thumbnail point

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

For recorded titles, sets how far a scene from the start is set as the title thumbnail.

0 sec. : 3 sec. : 10 sec. : 35 sec. : 1 min. : 5 min.

Note
- Thumbnails can also be changed to other scenes.
  See ⇨ page 106.

HDD/RAM title play

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Activates resume play per title or continuous play.

Title resume:
Remembers the point where you stop playback. Allows you to resume the playback from that point.

Serial playback:
You can play back titles (Original, Playlist) stored in the HDD or a DVD-RAM continuously.
Because there is no division between titles, the recorder remembers only the last point where you stopped playback.

Still group interval

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Sets an interval for display of still pictures (in seconds) when playing back a collection of still images.

1 sec. : 2 sec. : 3 sec. : 5 sec. : 10 sec. : Default

Priority contents

Selects the playback priority between JPEG (picture) files and MP3 (audio) files.

Photo: JPEG files take priority over MP3 files.
Audio: MP3 files take priority over JPEG files.

Notes
- If this selection does not correspond to disc contents, the recorder will take a longer time to start playback of the disc.
- To change this setting to a loaded disc, open the disc tray after the setting, then close the disc tray to have the recorder read the disc again.
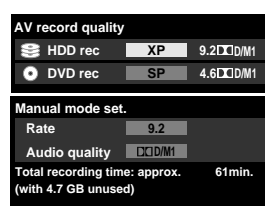
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DVD recorder operation

AV record quality

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

You can select from 4 combined picture and sound quality recording settings prior to actual recording. Actual selection applied becomes the default setting for the normal recording or programmed recording.

e.g.

```
AV record quality
  HDD rec       XP      9.2 □□D/M1
  DVD rec       SP      4.6 □□D/M1

Manual mode set.
  Rate                  9.2
  Audio quality         □□D/M1
Total recording time: approx.        61min.
(with 4.7 GB unused)
```

Sound and picture quality for the three recording settings of XP, SP and LP cannot be altered. You can freely change the settings by using "Manual mode set". Set in advance frequently used recording settings for DVD or HDD.

AV record quality

1) Press the ▲ / ▼ buttons to select the media to record.

2) Press the ◄ / ► buttons to select the recording settings.

Manual mode set.

1) Press the ▲ / ▼ buttons to select the desired item, "Rate" or "Audio quality".

2) Press the ◄ / ► buttons to change the setting.

   You can adjust "Rate" by 0.2 Mbps from 1.0 to 9.2. (You cannot set the rate from 1.0 to 1.4 and 1.4 to 2.0.)

   • If you set the rate of the "Rate" setting to 9.2, XP may be displayed in spite of the Audio quality setting.

3) Press the ENTER button.

Note
• Depending on the sound quality settings, the upper limit for the picture quality setting differs.

Picture record mode

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Adjusts problems with the brightness of video signals of TV broadcasts or other external input.

Press the ▲ / ▼ buttons to select the source, and the ◄ / ► buttons to select the mode.

(Only use this setting when you cannot adjust the brightness satisfactorily with the "Custom picture setting" in the "Picture/Audio settings" (▷ Page 118) of this recorder.)

Important:
• This setting changes the video signal to record and the recorded signal is not returned to the original state even when this setting is changed after recording. When duplicating from VHS tape, if you can check the video recording state beforehand, we recommend first playing back for a while and checking the overall brightness tendency, then setting an appropriate mode.

Standard:
  The brightness of signals received with this recorder and external input signals is adjusted automatically. Use this mode normally.

Mode 1:
  This setting is used to record the signals darker when the screen is too bright.

Mode 2, 3, 4:
  As the number rises, the signals are recorded brighter. Use these modes to adjust the brightness.

DVD-RW rec. mode setting

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Sets recording mode when formatting DVD-RW.

Video mode:
The disc will be formatted in Video mode.

VR mode:
The disc will be formatted in VR mode.

Video mode rec. setting

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

See

Relief recording

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

If you set a timer programme to a loaded DVD disc but the disc does not have remaining space to record the programme, the recorder records the whole programme to the HDD instead of the loaded disc.

Off:
Deactivates this function.

On:
Activates this function.

Notes
- This feature does not work while dubbing using the mode "Change quality".
- This function does not work when the remaining disc space of the HDD is less than of a loaded disc.

Customizing the function settings (Continued)

Management settings

Security folder setting

Sets the security folder to turn on/off.
See ⮕ page 55.

Genre setting

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

This registers a frequently used genre name onto the menu. Genre names registered here are displayed in the "Genre" on the Quick Menu.

1) Press the ▲ / ▼ buttons to select a position in the "Current genre list" you want to change, then press the ENTER button.

A list of genres appears.

2) Press the ▲ / ▼ buttons to select a genre, then press the ENTER button.

A list of genre names appears.

You can turn the pages using the ▶ button.

3) Press the ▲ / ▼ buttons to select a genre name, then press the ENTER button.

The selected genre name replaces the previous one of the position you selected at step 1).

4) Repeat steps 1) to 3) to register genre names.

5) When genre names are registered, press the RETURN button to return to the "Management settings" menu.

Power saving setting

This sets the front panel display in the standby mode and the HDD auto stop mode.

Eco. mode
Sets the front panel display to turn on/off in the standby mode.

Off:
Sets the front panel display to turn on in the standby mode.

On:
Sets the front panel display to turn off in the standby mode.

HDD auto stop

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

Turns on or off a power saving function that stops the HDD after a certain period of inactivity.

Off:
Turns off an HDD auto stop mode.

On:
Turns HDD drive off after recorder is idle for approximately 5 minutes.
When the PLAY or REC button is pressed for the HDD while the HDD drive is turned off, it takes a little longer time to play or record.

All HDD titles delete

| HDD | DVD-RAM | DVD-RW (VR) | DVD-RW (Video) | DVD-R (VR) | DVD-R (Video) |
| DVD-VIDEO | VCD | CD | | | |

This deletes all the titles on the HDD.

> **ℹ**
>
> **All titles are about to be deleted in spite of title protected. Proceed?**
>
> **Yes** | No

1) Press the ◀ / ▶ buttons to select "Yes", then press the ENTER button.

2) Confirm the message, press the ◀ / ▶ buttons to select "Yes" and then press the ENTER button.

Deletion of all titles starts.

If you want to cancel the deleting, select "No".

Note
- If you periodically execute All HDD titles delete, this holds down fragmentation (increased complexity) of the disc and maintains good operability.
- All titles in "LOCK" will be deleted.

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HDD Format

HDD	DVD-RAM	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Initializes the HDD.
Normally it is not required to initialize the HDD. However when the HDD does not function correctly, initializing the HDD may solve the situation. If you initialize the HDD, all titles stored in the HDD are permanently deleted.

e.g.

```
            ┌──────────────────────────┐
            │     HDD Format           │
            │                          │
            │  Initialisation will delete │
            │    all data. Proceed?    │
            │                          │
            │     Start    Cancel      │
            └──────────────────────────┘

    Disc format ▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭ ) %
```
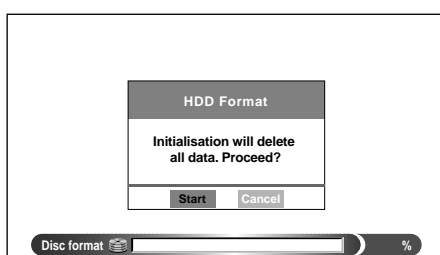
1) **Press the ◄ / ► buttons to select "Start", then press the ENTER button.**

2) **Confirm the message, press the ◄ / ► buttons to select "Start", and then press the ENTER button.**

   Initialization of the HDD starts.

   If you want to cancel the initializing, select "Cancel".

DVD-RAM physical format

HDD	**DVD-RAM**	DVD-RW (VR)	DVD-RW (Video)	DVD-R (VR)	DVD-R (Video)
DVD-VIDEO	VCD	CD			

Performs physical formatting of a DVD-RAM disc.
See ⇨ page 27.

Initial settings	See ⇨ **page 24, "INSTALLATION GUIDE".**

MEMO

13. Circuit Operating Descriptions

13-1 Video Block

If you want to know the detail, refer to each IC's sheet data.
Sheet data contains detailed functions of each IC.

Fig. 13-1

13-2 Audio Block

RD-XS24 has two stereo outputs and one digital output(coaxial) Decoded signal by AV decorder in main board is inputted to audio DA converter(AIC04), then filtered and amplified AIC05(OP-amp), and finally ouputted via RCA terminals and Scart terminals. The digital audio signal is driven by AIC08 inverter and ouputted via coaxial terminal

Digital audio data and clocks (XCK,BCK,LRCK,DATA0 and ML,MC,MD for DAC setting)

Digital to Analog converting

For digital output

This has functions of low-pass filter and 6dB amp. Transmitted signals from DAC is optimized though this IC.

LOADER

MAIN

HDD

BUFFER AIC08 74HC04 — COAXIAL_OUT

AUDIO DAC AIC04 PCM1753 — L/R — OP-AMP AIC02 BA4560 — L/R — R_OUT×2 / L_OUT×2

SETTING DATA

OP-AMP AIC06 BA4560

Output Block

AUDIO DAC AIC04 PCM1753

CANAL IC SIC01 MM1647

SCART1-L/R_OUT
SCART1-L/R_IN
SCART2-L/R_IN
SCART2-L/R_OUT

SCART AV1 (TV)

SCART AV2 (EXT)

MUX VIC07 MC14052 — L/R

MUX VIC02 MC14052

SCART1-L/R_IN
SCART2-L/R_IN
TUNER-L/R_IN
FRONT-L/R_IN

OP-AMP AIC06 BA4560 — TUNER

R_OUT×2 / L_OUT×2

Input Block

L/R

RD-XS24 has three line inputs and one RF input from tuner. These analog signals are converted to digital data by audio AD onverter(AIC03). The signal passed AD converter transmit to main board which have Dolby Digital encoder/decoder.

This IC has 3 inputs and 2 ouputs for audio and has audio and video swicher with I2C bus for two SCARTS(AV1,AV2). Each inputs and outputs channels are the same as this block diagram.

MC14051 is analog Mux for swiching audio inputs. Swiching logic controls are performed by front micom(MIC01). Swiched one input output to main board.

Fig. 13-2

13-3 Tuner

1) Low Pass Filter & High Pass Filter
   This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF (45.75MHz), this filter
   prevents interference.

2) Single tune
   This consists of a filter circuit, RF AMF, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. It is very important part which improves NF (noise figure) and prevents the various of spurious signals.

3) RF AMF
   RF AMF is made of FET (Field Effects Transistor). It is controlled by AGC coming from IF DEMOD block.

4) Double tune
   It consists of a double tuning circuit to improve characteristic of rejection that results in a better band characteristic.

5) Mixer IC (Mixer, OSC, PLL)
   It consists a VHF and UHF OSC and Mixer circuit. We applied mixer to make better characteristic of rejection, it shows especially various beat characteristic.

6) PLL IC
   The PLL IC plays a role selection of Tuner channel. It was built-in three wire PLL IC, charge pump and band driver.
   The minimum of step frequency is 31.25KH z.
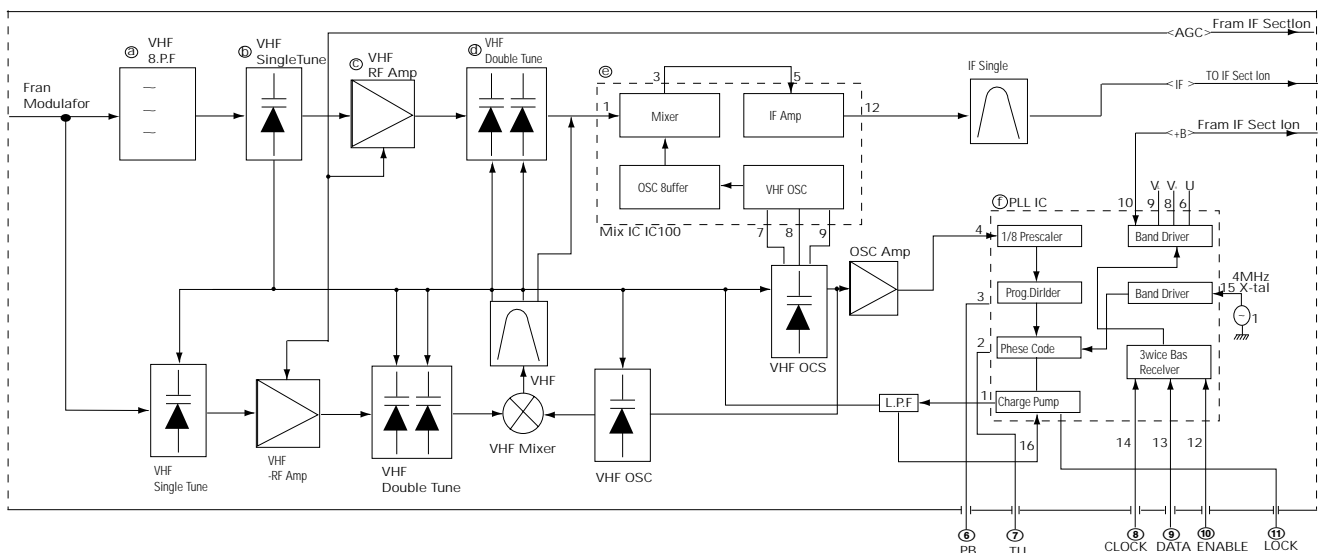
Fig.13-3

13-4 IF

1) SAW FILTER

It passes only needed band of the signal that is converted to IF frequency and decrease the others band to minimize the effect of adjacent channel.

2) RF AGC Control

It used adjusting to determine RF AGC working point in tuner.

3) VCO Tank

When VCO tank detects PLL, it makes the signal which sets a standard.

4) AFT (Auto Frequency Tuning)

AFT automatically controls the oscillator frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT.
The 90 degree delayed phase signal is input at the same time to AFT and, the results come out.

5) IF AMP

IF signal , which is selected in Saw filter, is amplified in IF amp frequency enough to be detected. The IF amp has parallel inputs & outputs structure.
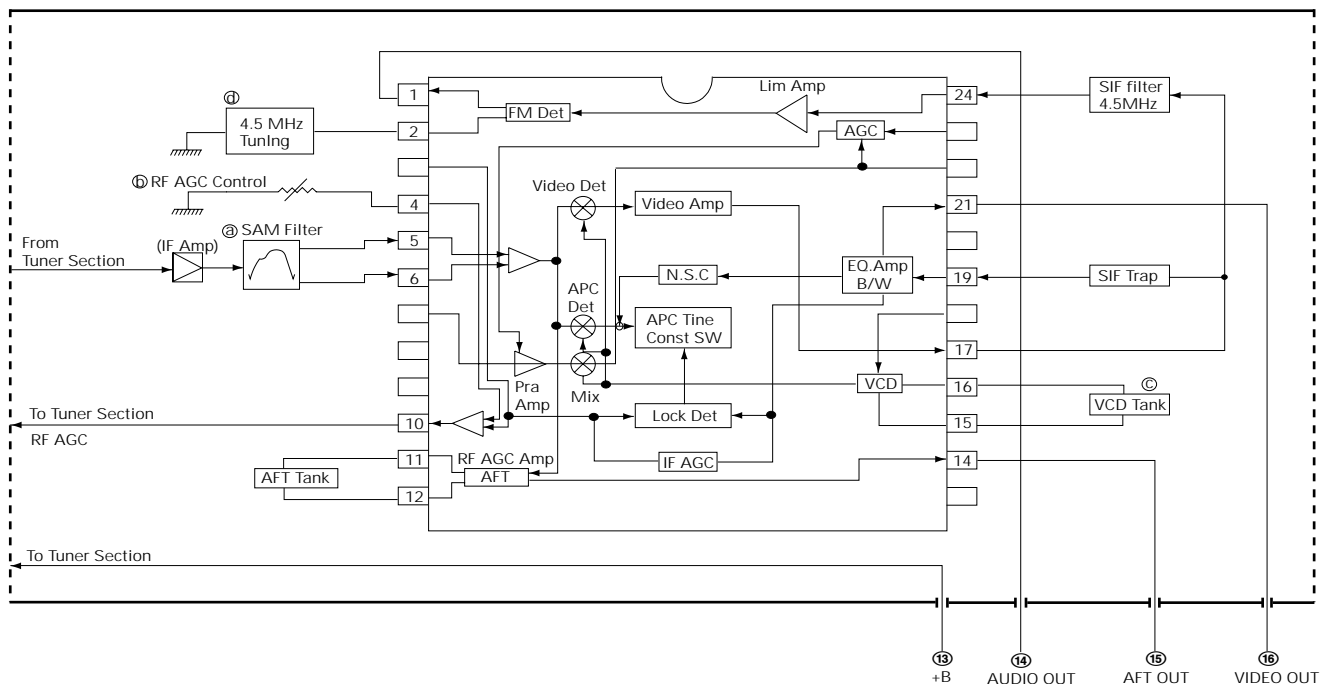
Fig. 13-4

14. Reference Information

14-1 Introduction to DVD

14-1-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or thr Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelenght of 650nm (635nm).

• **DVD Vs. CD-ROM**

	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelenght	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

2) Disc Formats
DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.

Single Layer : 4.7GByte — Label, Polycarbonate, Bonding layer, Reflective layer, Polycarbonate

Dual Layer : 8.5GByte — Label, Polycarbonate, Reflective layer, Bonding layer, Semi-reflective layer, Polycarbonate

Dual Side Single Layer : 9.5GByte — Polycarbonate, Reflective layer, Bonding layer, Reflective layer, Polycarbonate

Dual Side Dual Layer : 17GByte — Polycarbonate, Semi-reflective layer, Reflective layer, Bonding layer, Reflective layer, Semi-reflective layer, Polycarbonate

14-1-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-media software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000times)	This can be virtually used as hard-disk, with a random read-write access
DVD-RW	Rewritable (About 1000times)	Similar to DVD-RAM except than its technology features a separated read-write access more like phonograph than a hard disk.

14-2 DVD-Video Fromat

14-2-1 Main Features

1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)

2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)

3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
   - For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.

4) Multi-Language
   - Able to store up to 8 languages of dubbing.
   - Able to store up to 32 subtitle languages.

5) Multi-Aspect Ratio
   3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic) / 4:3 Pan & Scan / Letter Box.

6) Multi-Story
   Possible to implement Interactive Viewing which enables the user to select the scenario.

7) Multi-Angle
   Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function
   properly.

14-2-2 Audio & Video Specifications

Classification		DVD-Video		Video-CD	LD
VIDEO	Compression	MPEG-2		MPEG-1	Analog
	Pixel	720 x 480		352 x 240	
	Horizontal resolution	Max. 500 Lines		Max. 250 Lines	Max.420 Lines
	Compression rate	1/40		1/140	Analog
	Transmission speed	Max. 9.8Mbps (variable)		1.15Mbps (fixed)	
	TV aspect	16:9 / 4:3		4:3	4:3
AUDIO	Audio	Max. 8 streams		2CH stereo	2 Analog CH. 2 Digital CH. (16Bit/44.1KHz) or 1 Analog CH. 1 Stream of Dolby Digital 2 Digital CH. (16Bit/44.1KHz)
	Recording type	Dolby Digital	Linear PCM	MPEG-1 Layer 2	
	Transmission rate	448Kbps/stream	6.144Mbps/stream	224Kbps	
	Channel	5.1CH/stream	8CH/stream	2CH	
	Sampling frequency	48KHz	16, 20, 24Bit/48, 96KHz	16Bit/44.1KHz	

14-2-3 Detailed Feature
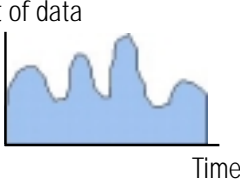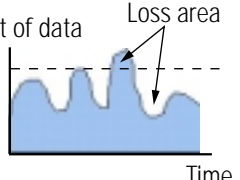
| DVD-Video Feature 1 | When Developing the DVD Software, various addition and modification is possible. |

As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

- 1 Movie (3.5Mbps)
  + Subtitle (1 Language)
  + Surround Audio (1 Language)
  = 160min storage (4.673Gbytes)

- 1 Movie (3.5Mbps)
  + Subtitle (4 Language)
  + Surround Audio (4 Language)
  = 160min storage (4.680Gbytes)

- 1 Music Video (4Mbps)
  + 2ch High quality Audio (96kHz/24bit)
  = 72min storage (4.648Gbytes)

| DVD-Video Feature 2 | Application of the MPEG-2 compression technology. |

DVD-Video uses the variable compresion technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	• MPEG-2 (Variable compression : Max. 1/40) - Field unit compression. - Compression rate change according to the amount of Data. - Differentiates the still image and the moving image compression rate, reducing Data loss and enables efficient compression.	Amount of data Time
Video-CD	• MPEG-1 (Fixed compression : Max. 1/140) - Frame unit compression. - Compresses all data using the same ratio. • Fast movements are jagged, and unnatural	Amount of data ⎯ Loss area Time

DVD-Video Feature 3	High quality surround audio.

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Liner PCM method, providing the better-than-CD quality and theater like audio quality.

- DTS (Digital Theater System)
  Home theatre and music playback in the home, DTS provides high quality 5.1-channel surround sound with many extras not offered by other consumer formats. As well as handling DTS-branded releases from a growing number of music labels and consumer software producers, DTS provides enhanced 6.1 matrix and DTS 6.1 discrete decoding that envelopes the listener in sound. DTS technology is featured in a wide cross section of receiver/pre-amplifiers, DVD players and and add-on components from leading consumer audio vendors

- Dolby Digital (AC-3)
  - Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L/R, Center, Surround (Rear) L/R)and the Sub woofer to provide live surround audio.
  - Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
  - Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- Linear PCM (Pulse Code Modulation)
  - Provides the high quality Digital sound without the audio data compression.
  - Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- Dolby Digital compatible Audio Mode

Audio Coding Mode	Channel Format					Remark
	Front			Surround (Rear)		
	L	C	R	L	R	
1/0		O				Mono
2/0	O		O			Stereo
3/0	O	O	O			
2/1	O		O	Mono		
3/1	O	O	O	Mono		Surround
2/2	O		O	O	O	
3/2	O	O	O	O	O	

DVD-Video Feature 4	Multi-Language

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

DVD-Video Feature 5	Multi-Aspect

- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.

  - 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
  - 4 : 3 TV : Letter Box Mode, Pan & Scan Mode

16:9 Wide   4:3 Pan & Scan   4:3 Letter Box
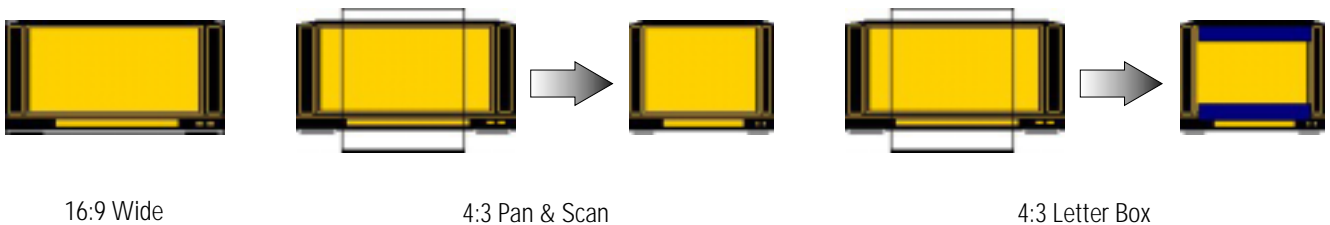
Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 6	Multi-Angle

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
  --> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.
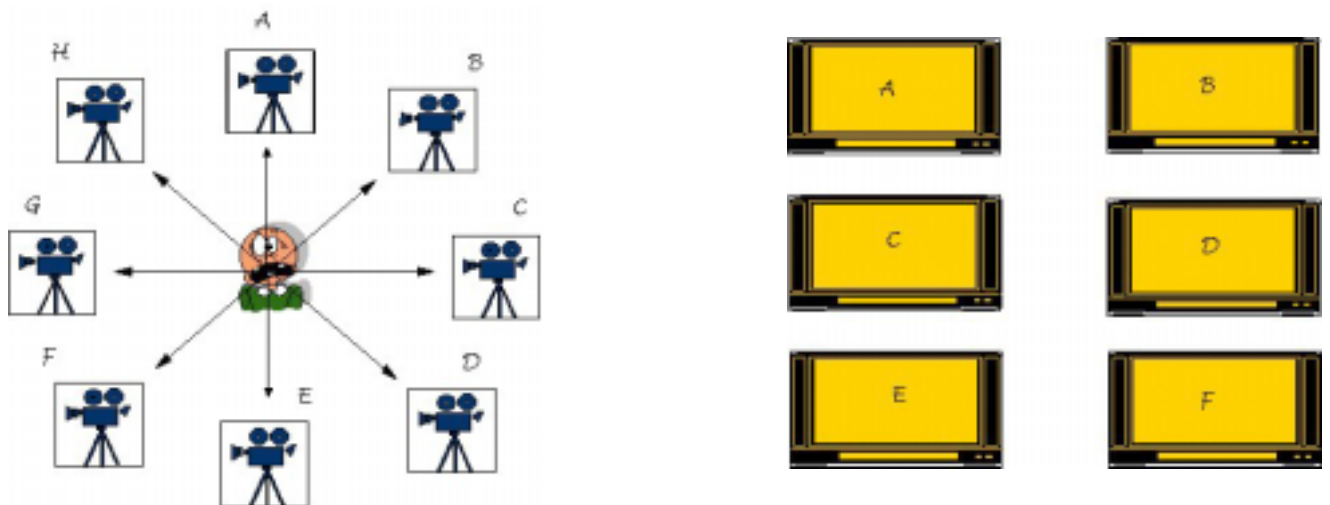
Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 7	Multi-Story

- DVD-Video provides the enviroment suitable for the bi-directional Software develoment, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION	Parental Lock

- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parential Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

COPYRIGHT	Regional Code & Macrovision

- Classify the world into 6 regions, and if the DVD Title and the Player's "Reginal Code" do not agree, playback is prohibited.

- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**

  - Region 1 : The United States and its territories, Canada.
  - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
  - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
  - Region 4 : Mexico, South America, Australia, New Zealand.
  - Region 5 : Russia, Eastern Europe, India, Africa.
  - Region 6 : China.
  - Region 0 : Worldwide (All Code)
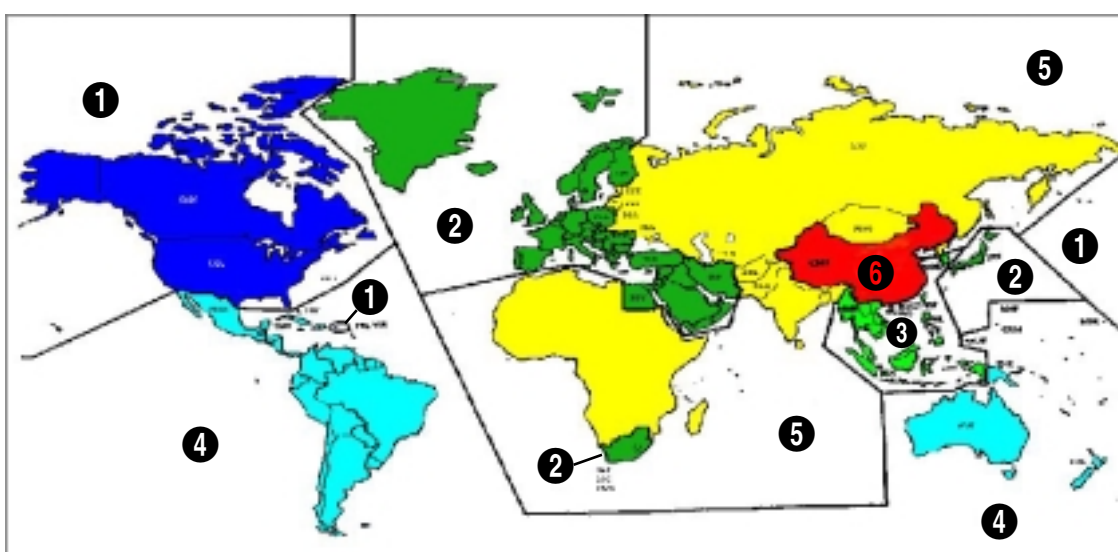
- Adoptation of the Macrovision System disables the copying on to other media.

Remark	DVD-Video Authoring Process

● The image quality of the DVD-Video may vary accoring to the quality of the Master and the Authoring Process

   - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
   - Different Authoring Process are used accoring to the Software developers, and this may affect the DVD image quality.

● **Authoring Process**
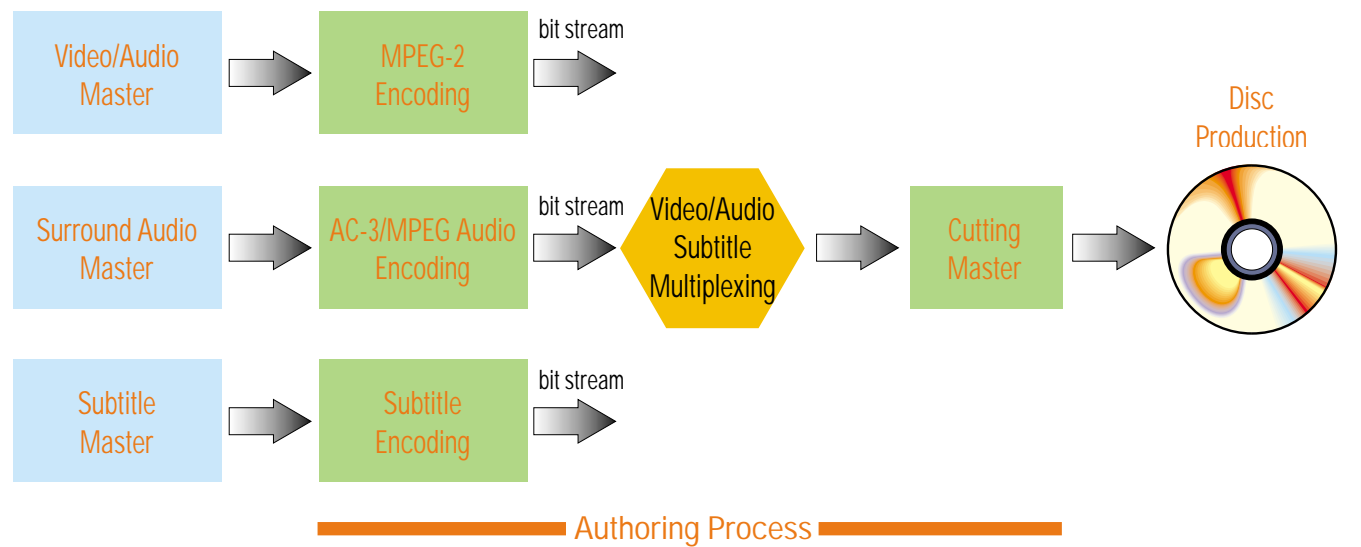
TOSHIBA CORPORATION

TOSHIBA

SERVICE MANUAL

HDD/DVD VIDEO RECORDER

RD-XS24SB
RD-XS24SF
RD-XS24SG

NOV. 2005 (SA)

8. Block Diagrams

8-1 All Block Diagram

8-2 Digital Block Diagram

Digital基板

DIGITAL BLOCK

EMI bus

FLASH
64Mbit × 2

TIMER

UART0

I^2C

EEPROM
64kbit

24.576MHz
X'tal

DDR SDRAM
256Mbit × 4

XS24-TB
uPD61175F1

XS24-TG/TF
uPD61177F1

ATA

DVD-RAM

ATA

HDD (160GB)

CV/Y-IN

LPF

C-IN

LPF

Y

C

CY

VIDEO

CB

CR

27MHz
X'tal
MasterCLK

REC-ACK

REC-LRCK, REC-BCK

REC-DATA

SPICS, SPIDA, SPICK

PB-DATA

PB-BCK, PB-LRCK

PB-ACK

IEC958
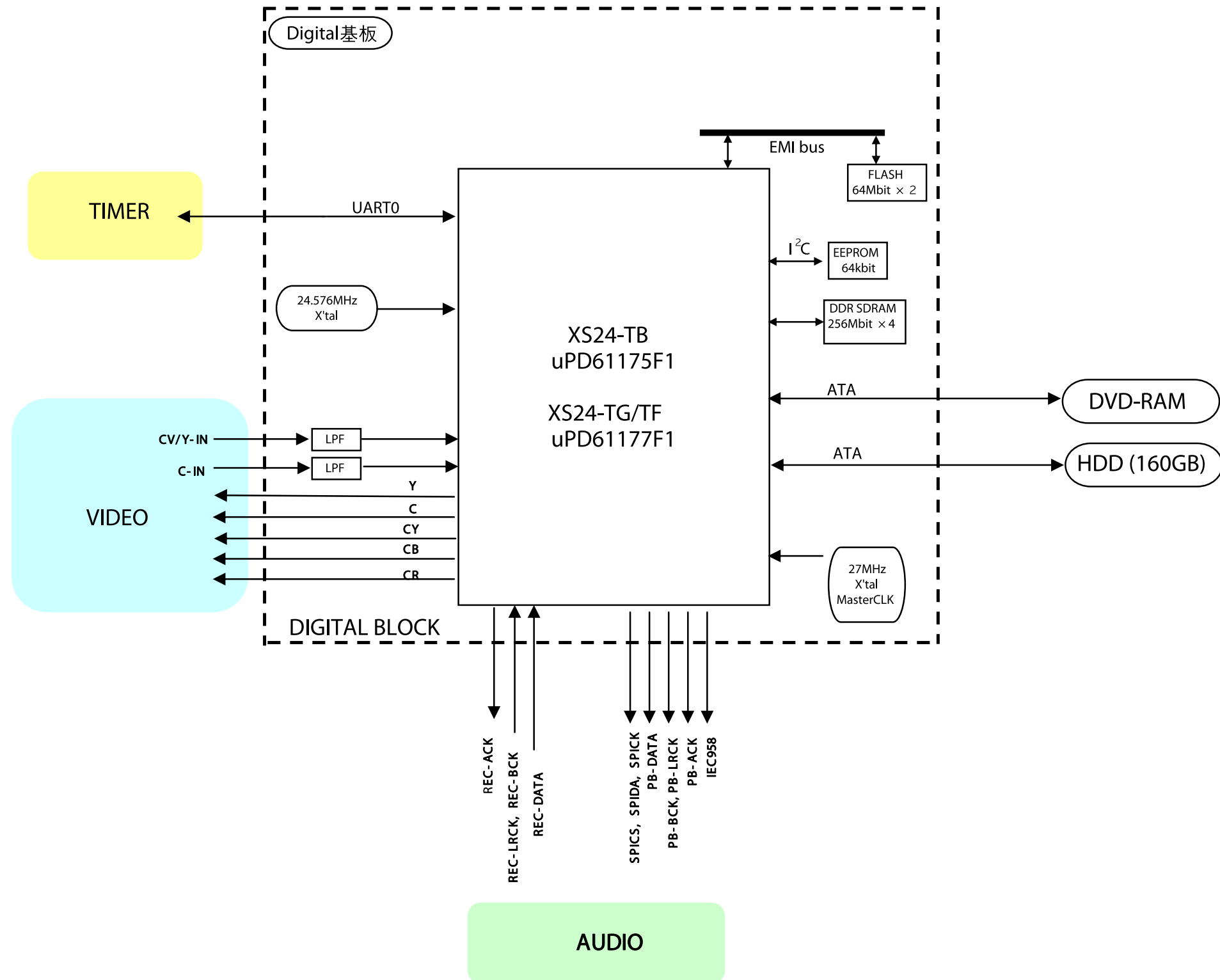
AUDIO

8-3 Audio Block Diagram
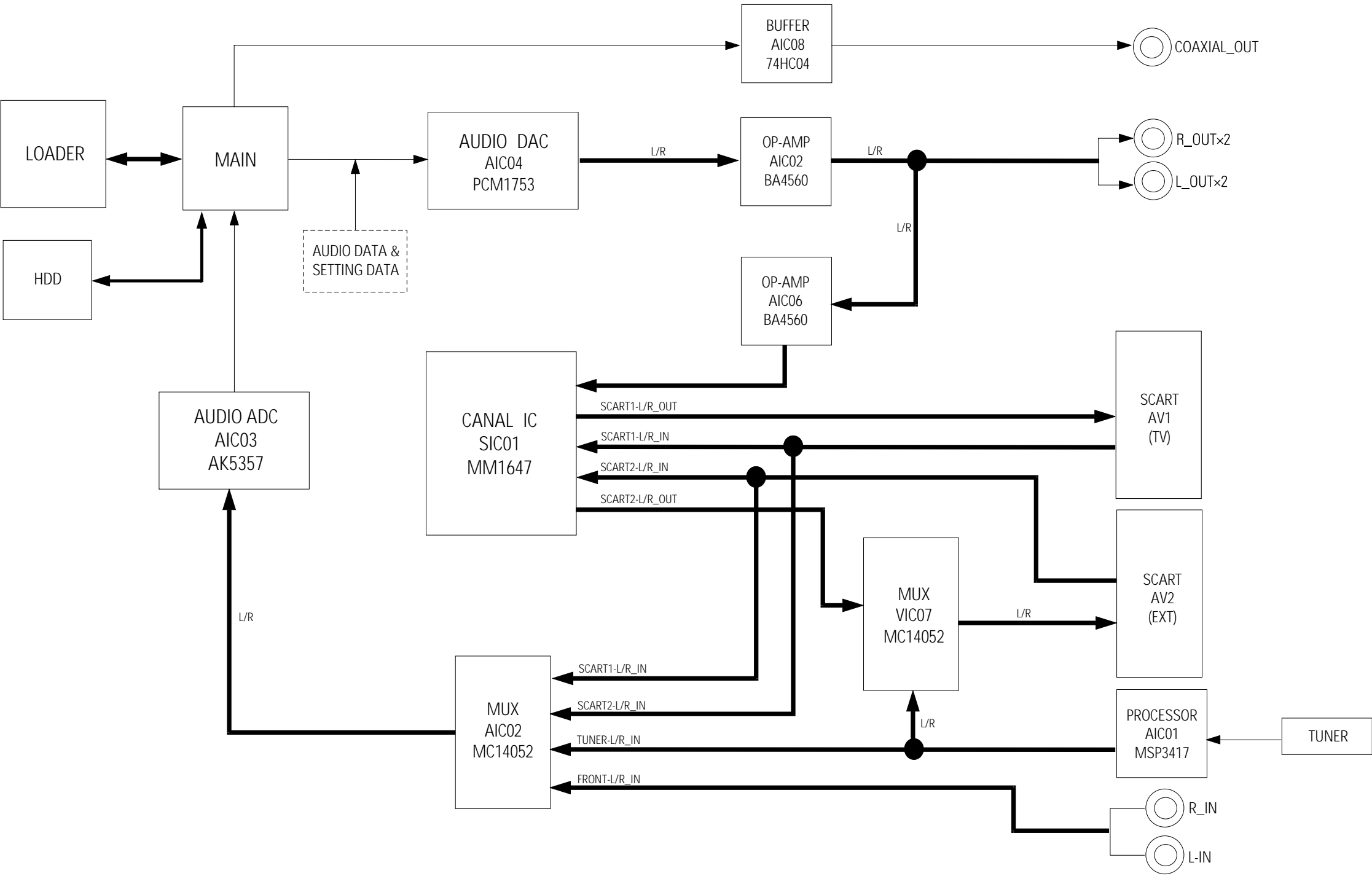
8-4 Video Block Diagram
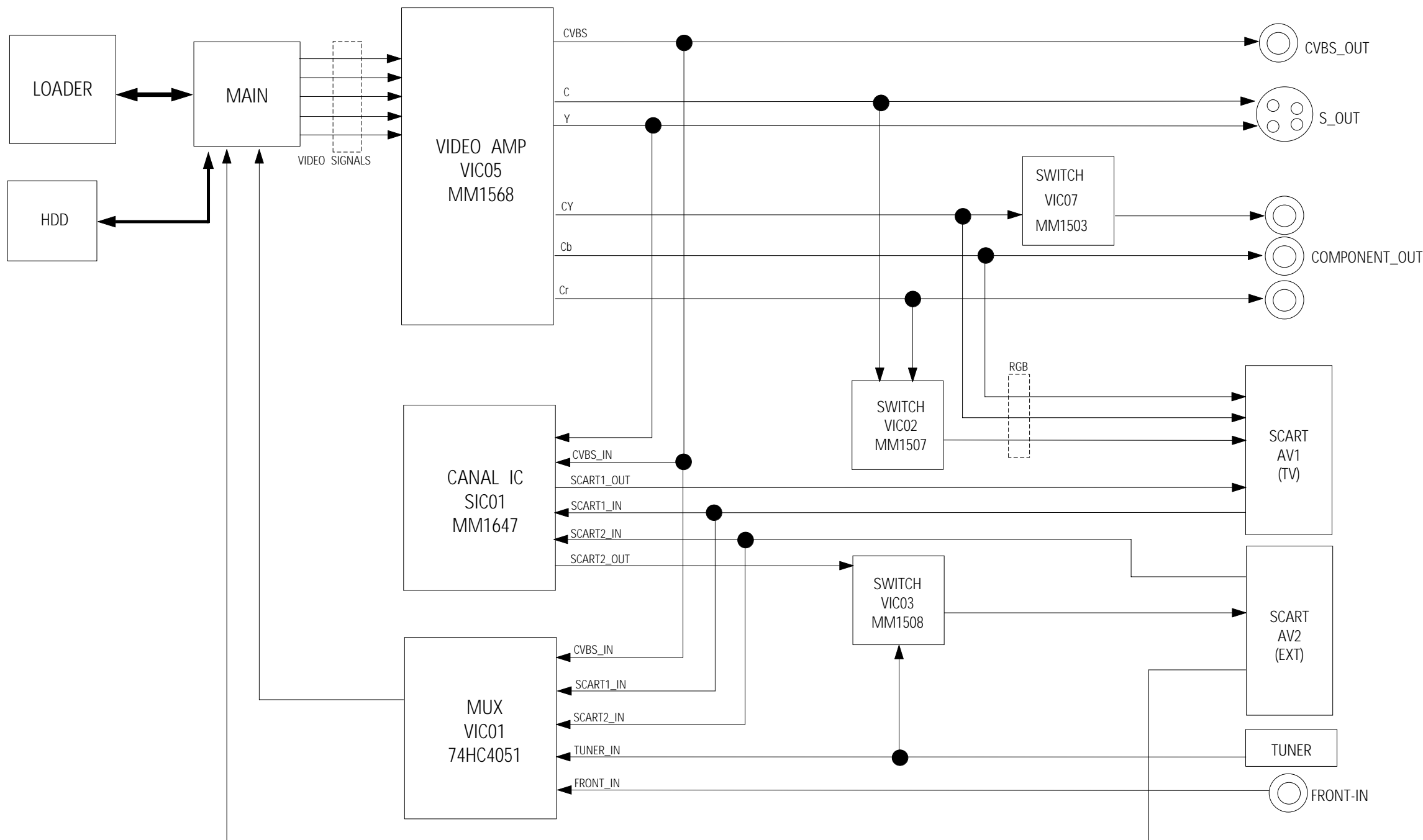
8-5 AIC01(MSP3417) Block Diagram

8-6 AIC02-AIC07(MC14052) Block Diagram
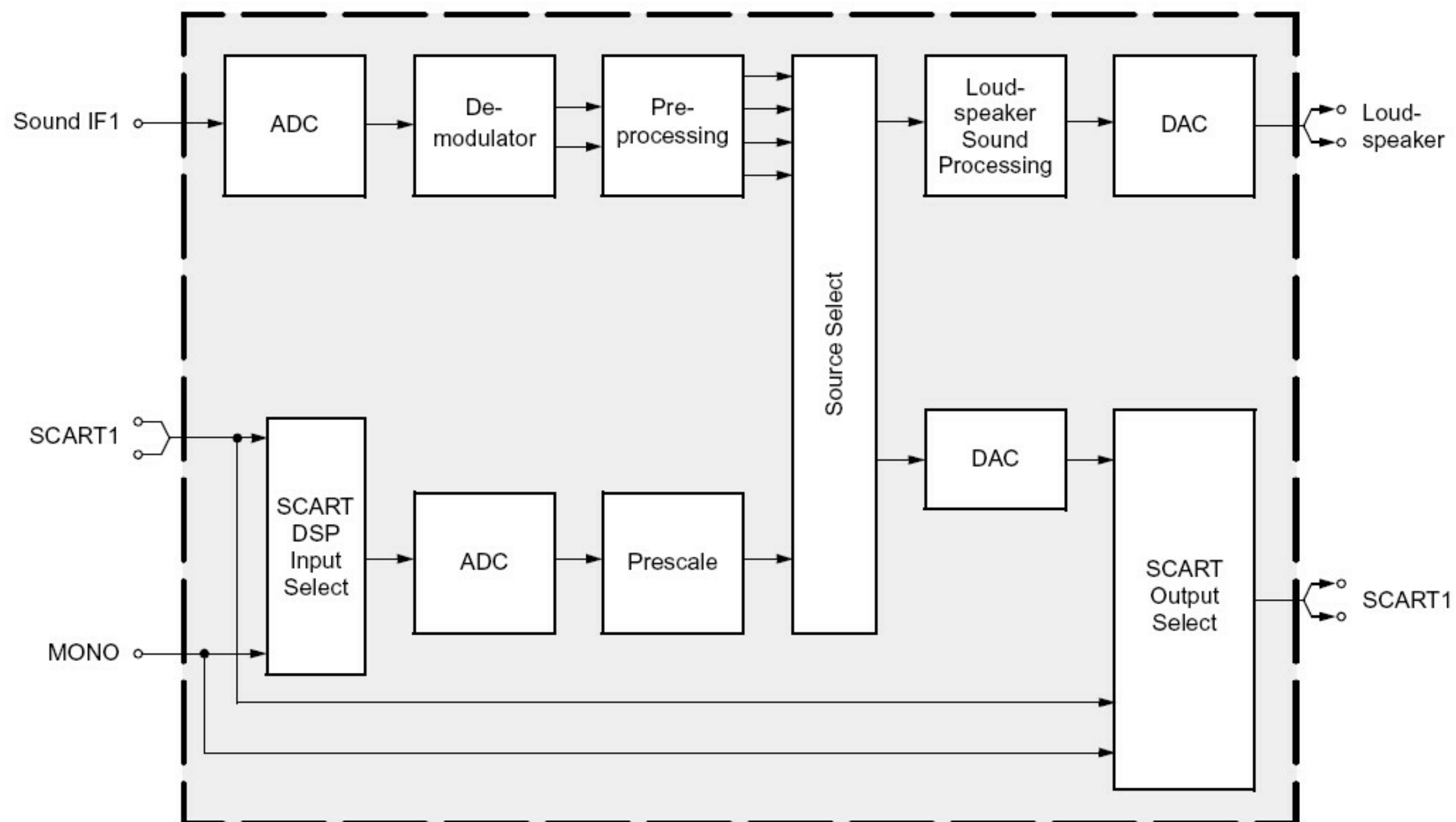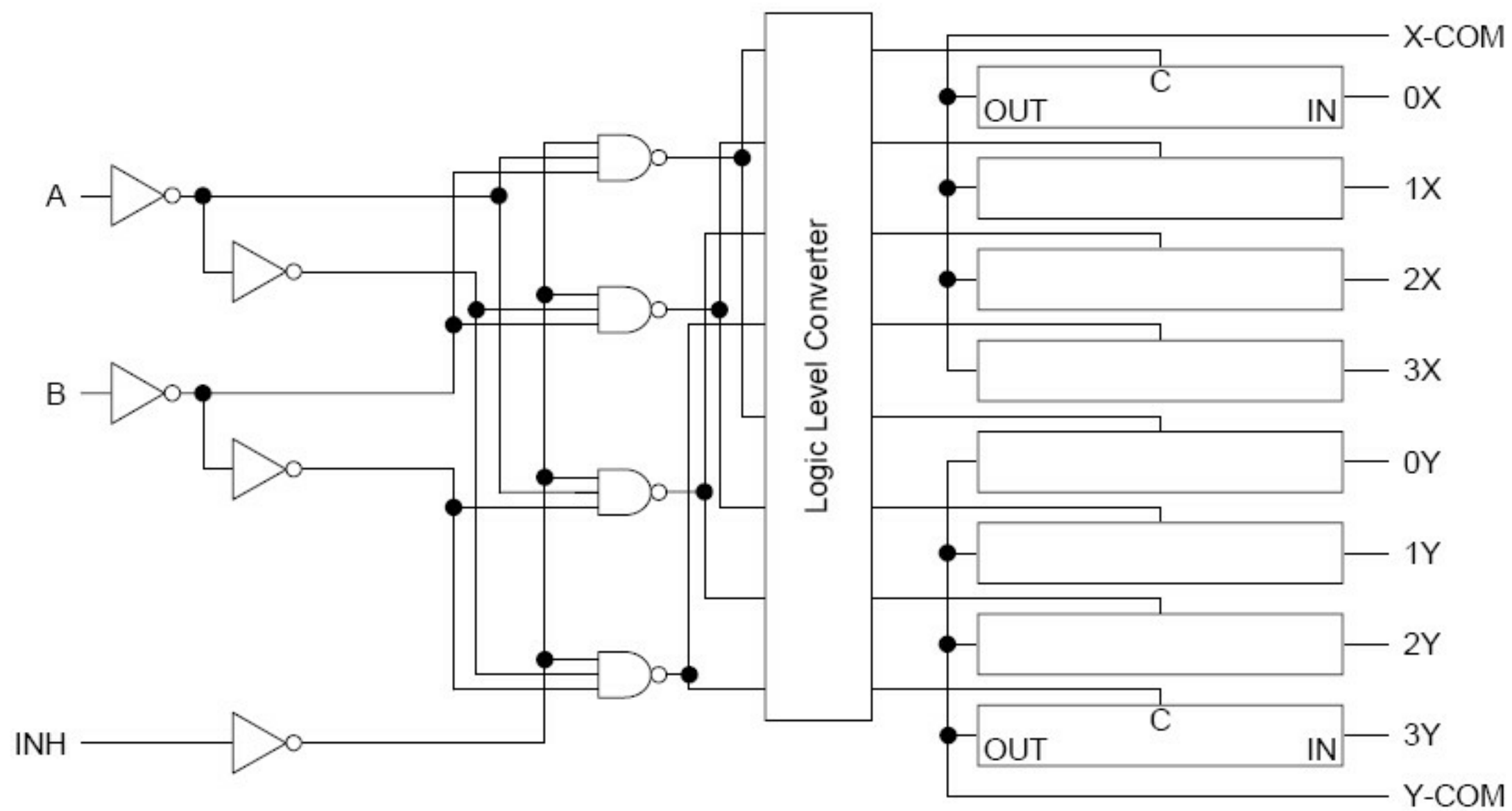
8-7 AIC03(AK5357) Block Diagram
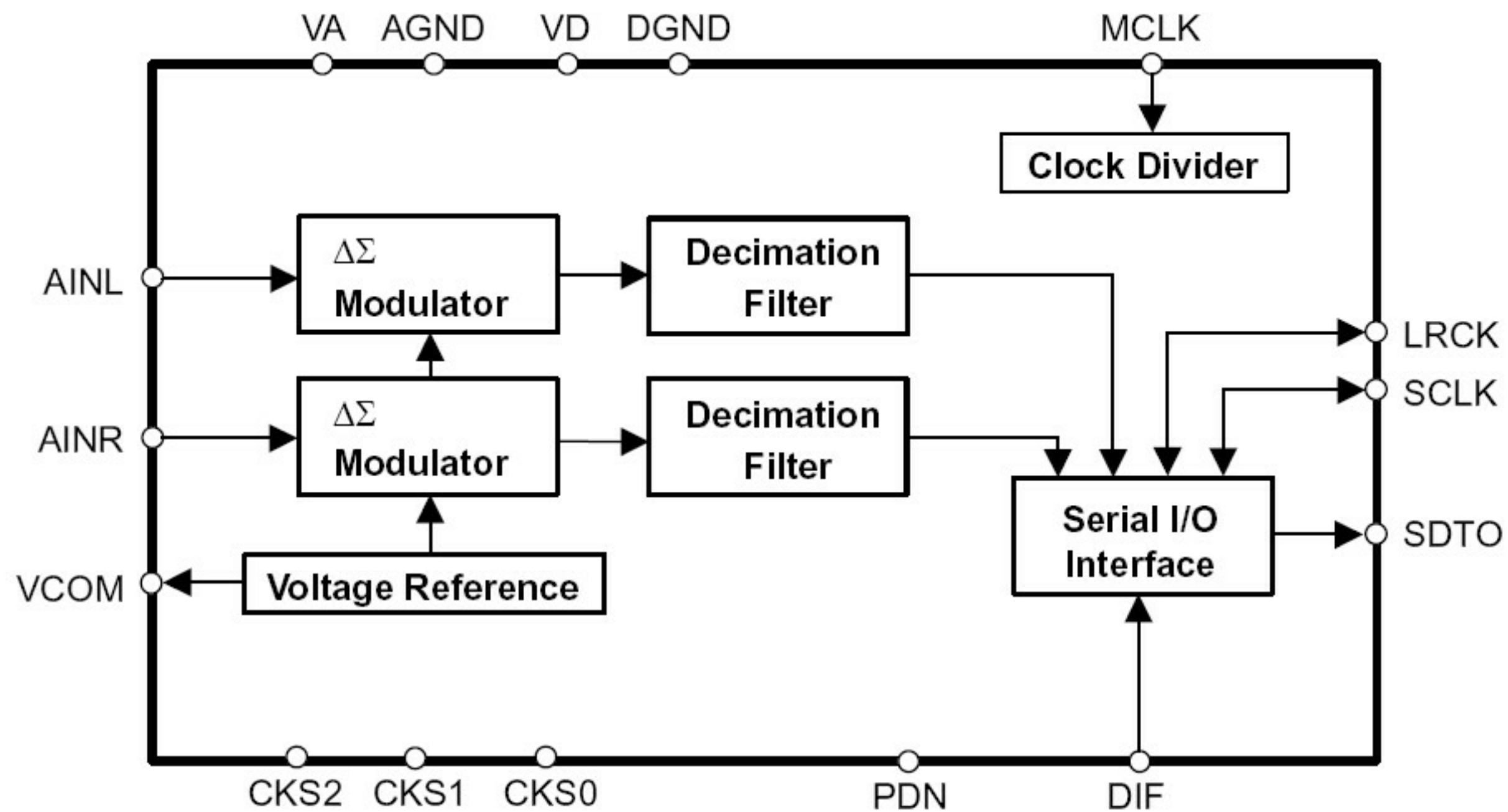
8-8 AIC04(PCM1753) Block Diagram

† Open-Drain Output for the PCM1755
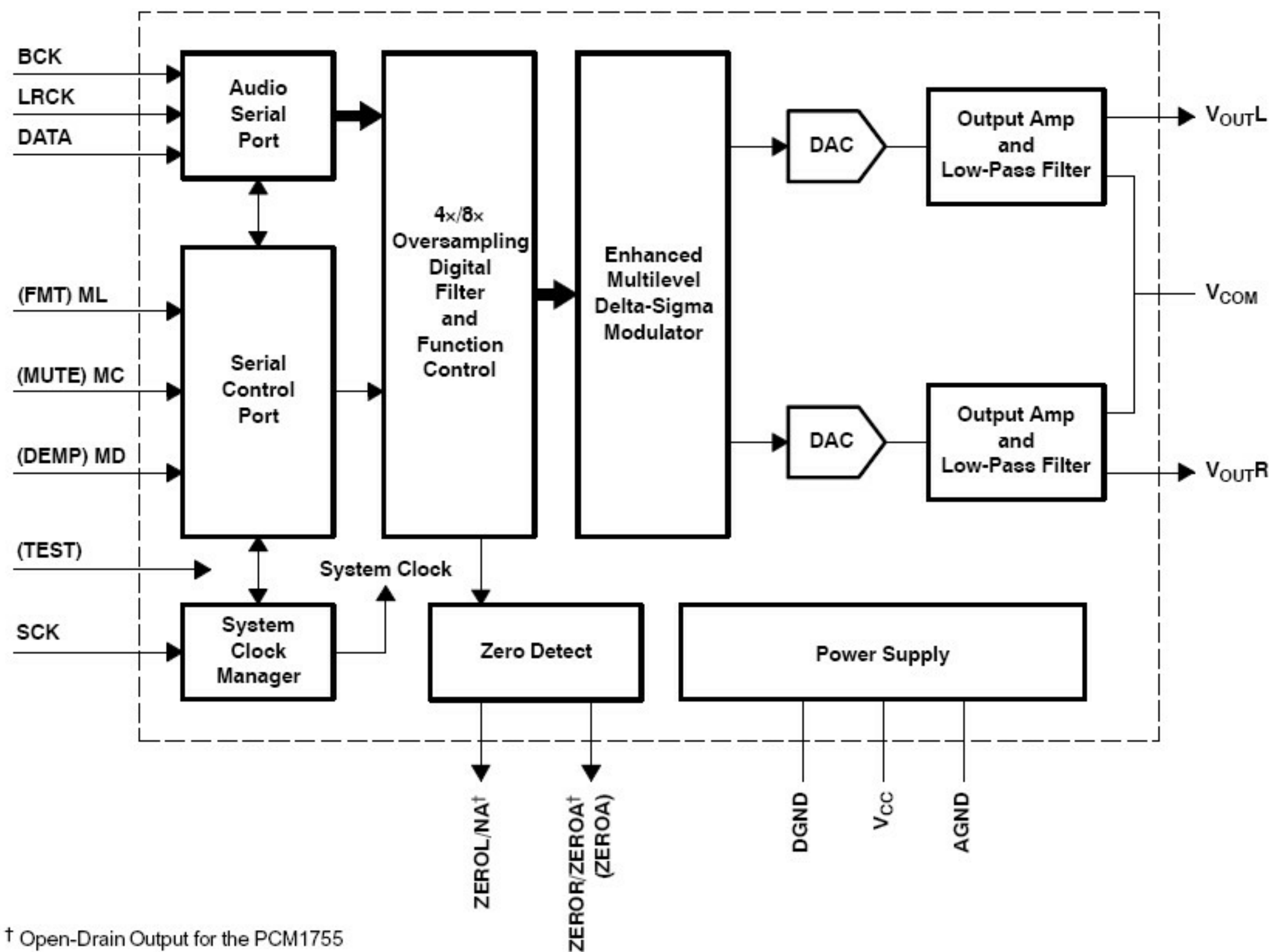
8-9 KIC01(PT6961) Block Diagram
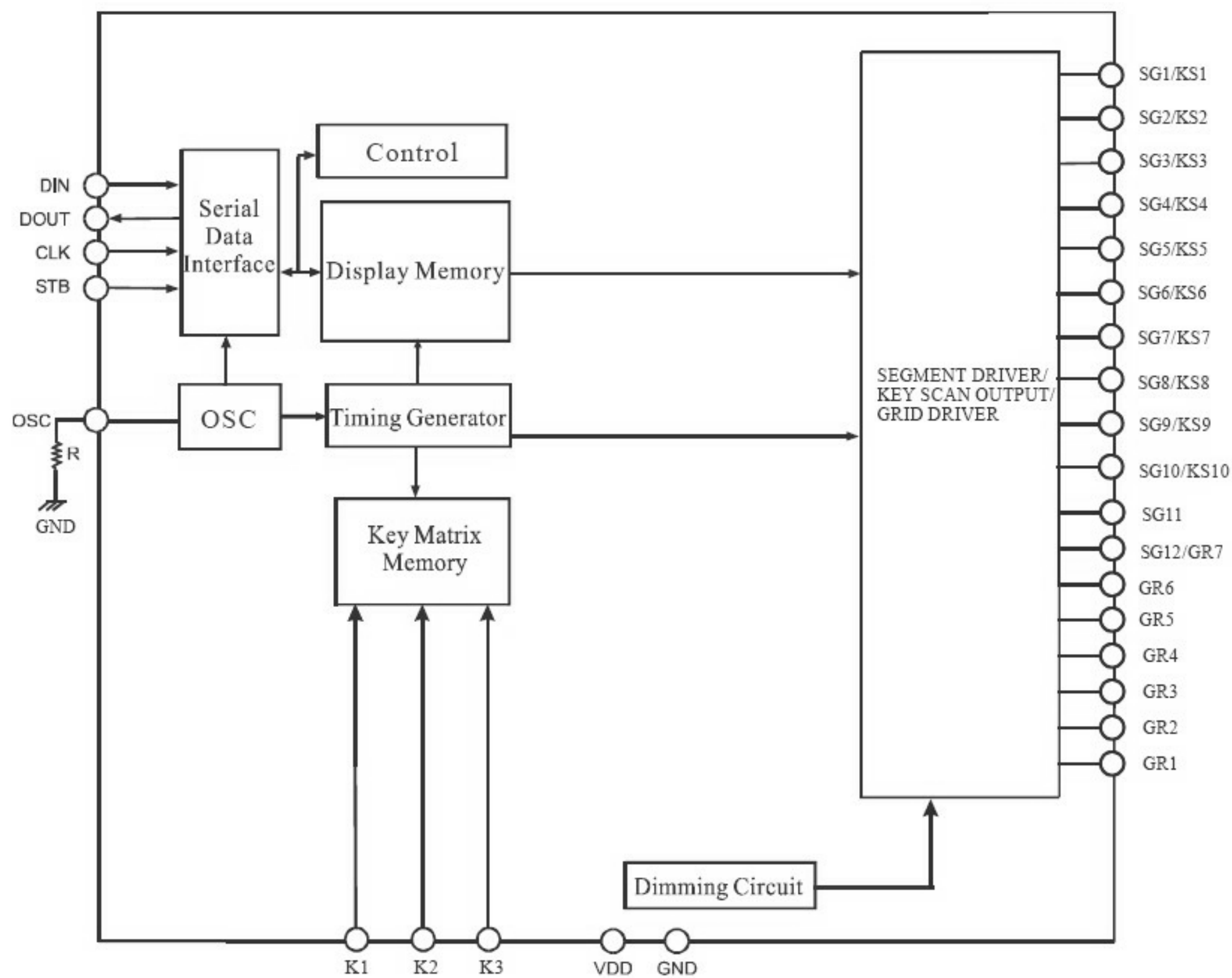
8-10 MIC01(78F4225) Block Diagram

8-11 MIC02 Block Diagram

SDA

SCL

DAV

SYN$_{IN}$

SEPC

SEP$_{OUT}$

SEP$_{IN}$

CTRL2

V$_{DD}$1,2

V$_{SS}$1,2

I^{2}C
interface

Data latch
circuit

Sync separator and data
separator circuit

Data acquisition circuit

Vertical
separator
circuit

AFC circuit (VCO)

Synchronization
recognition circuit

Timing generator

SYNC$_{JDG}$

CP$_{OUT}$ VCO$_{IN}$ VCOR H$_{OUT}$ V$_{OUT}$

X$_{IN}$ X$_{OUT}$ CTRL1 CDLR RST
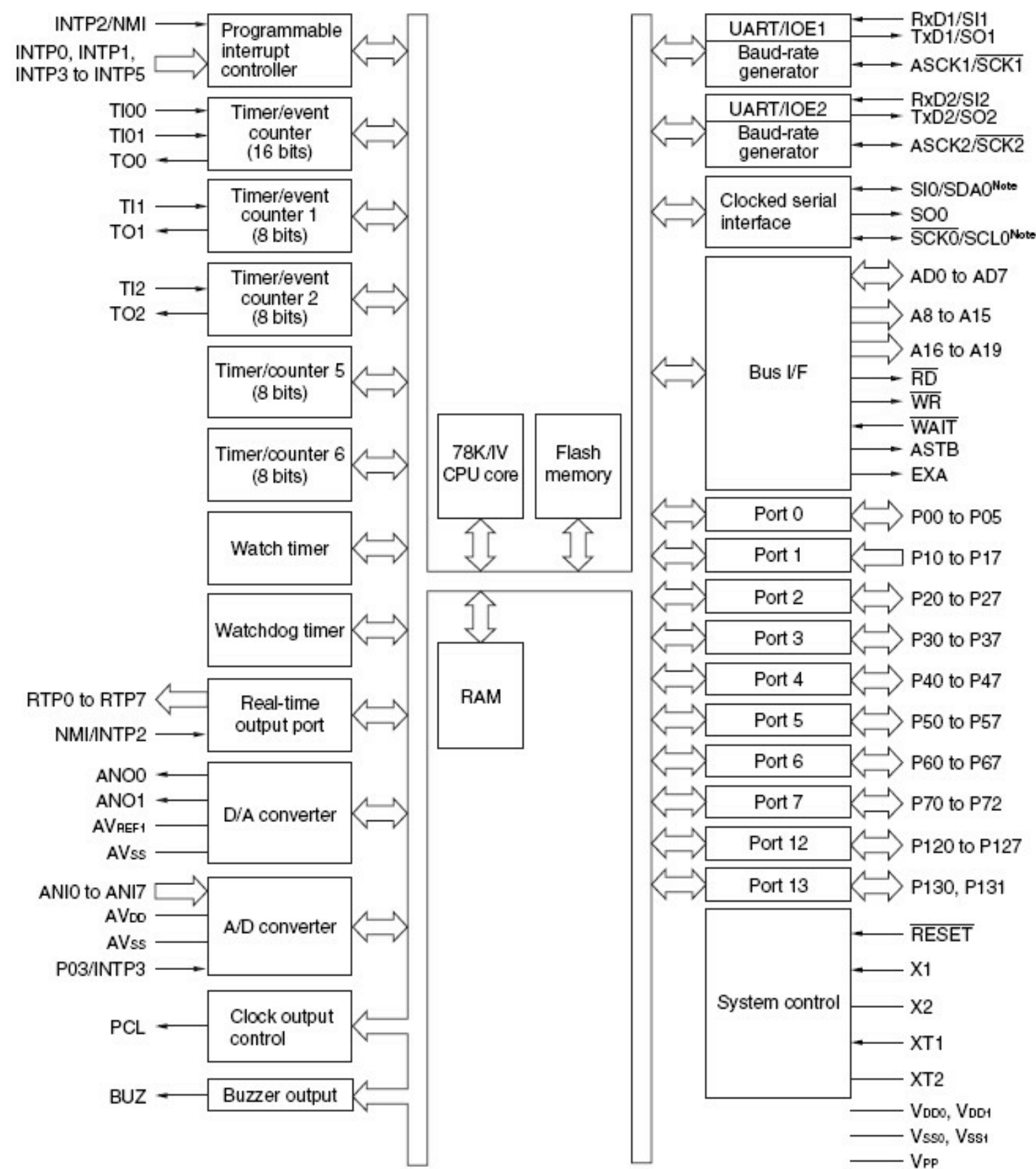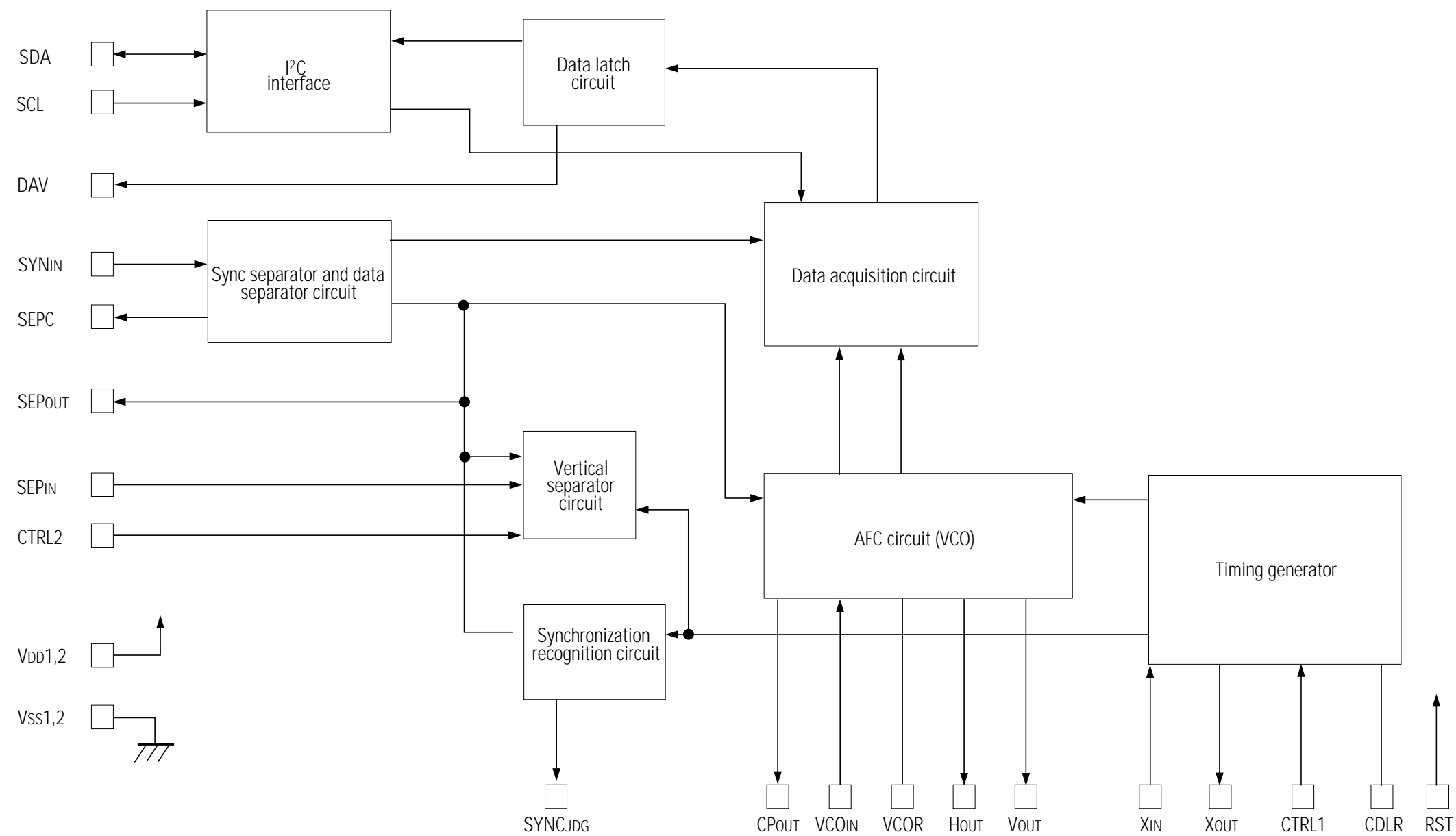
8-12 SIC01(MM1647) Block Diagram

電源電圧：＊VCC1=5V, VCC2=12V
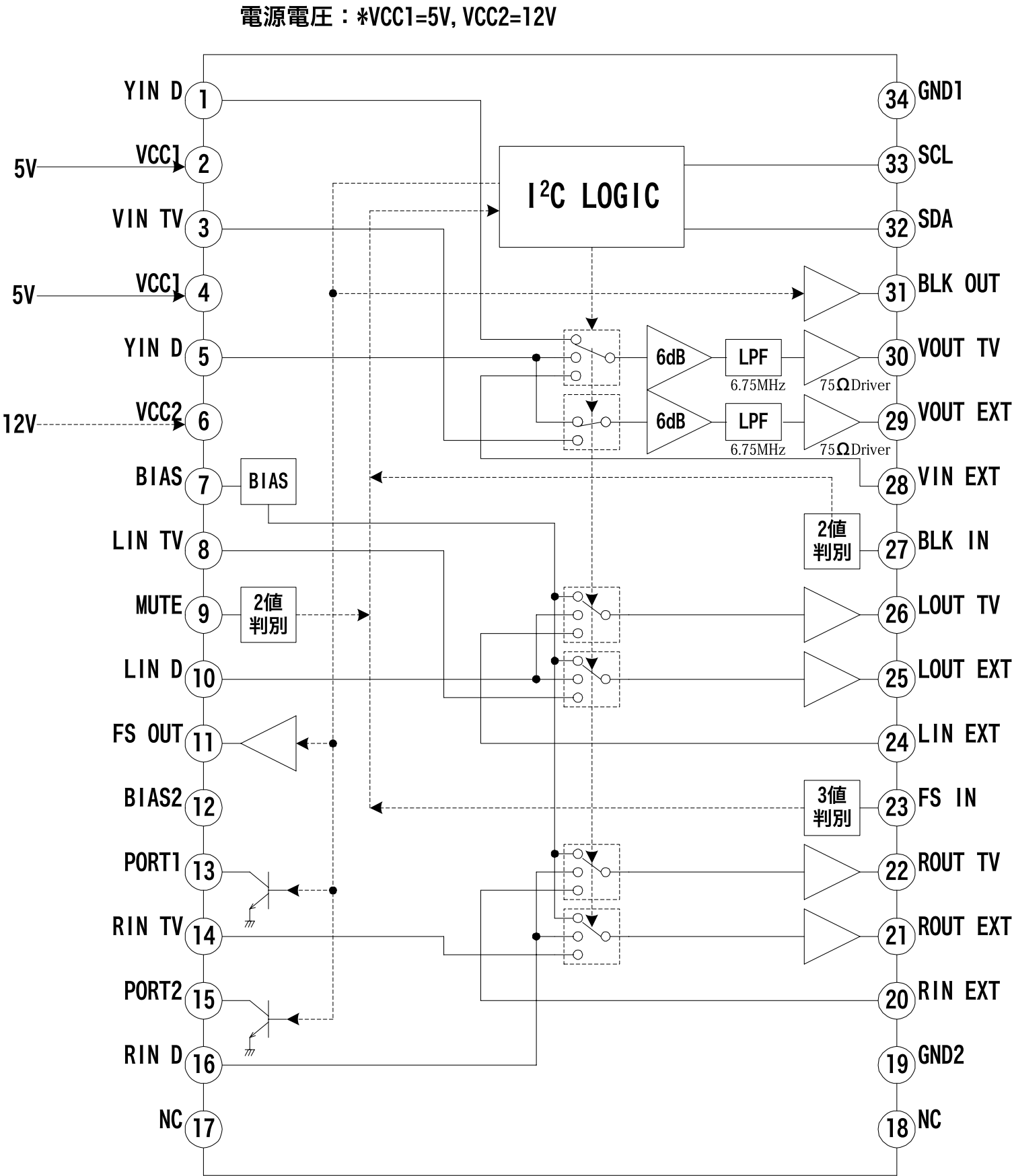
8-13 VIC01(74HC4051) Block Diagram
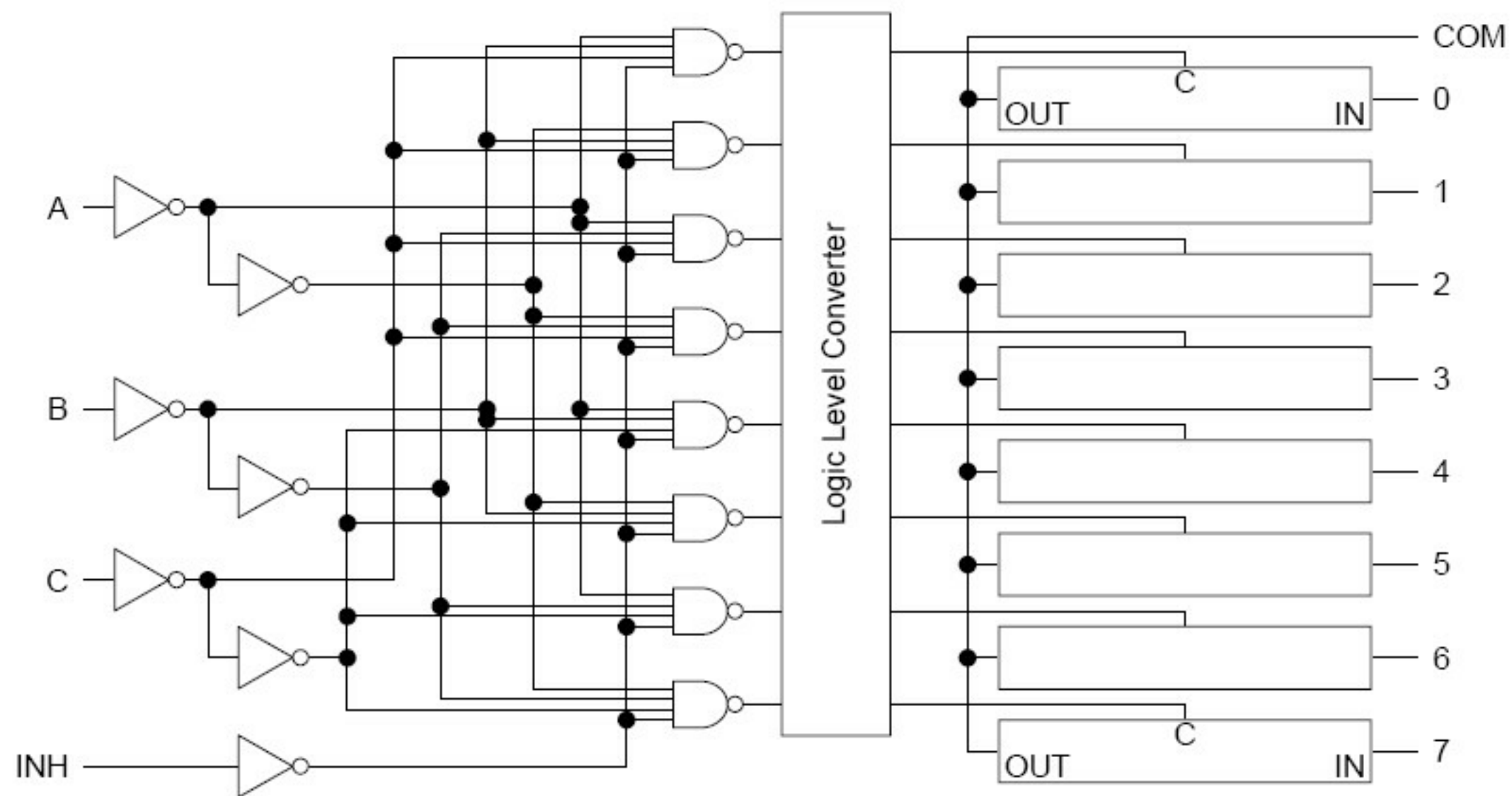
8-14 VIC05(MM1568) Block Diagram
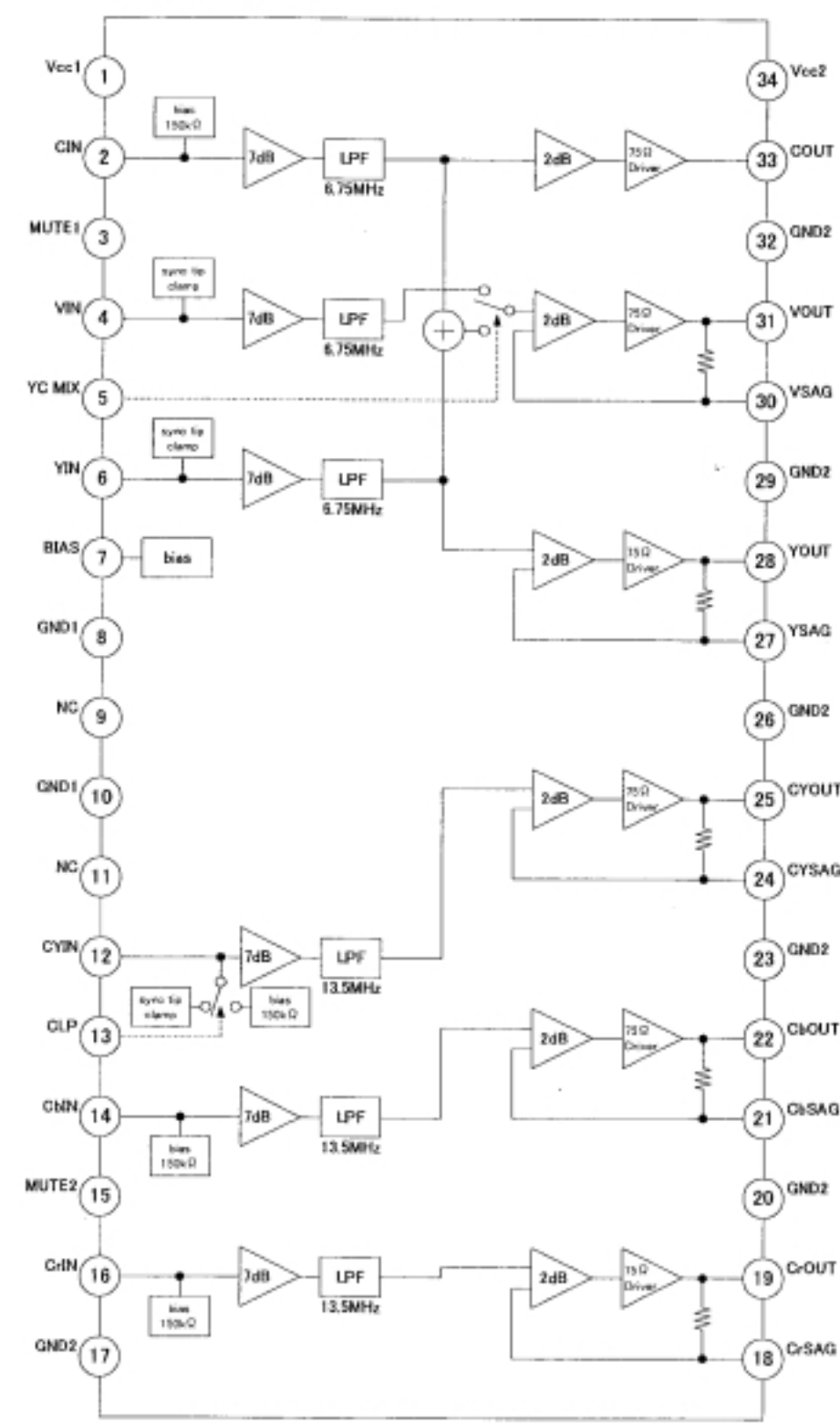
MEMO

9. Wiring Diagram
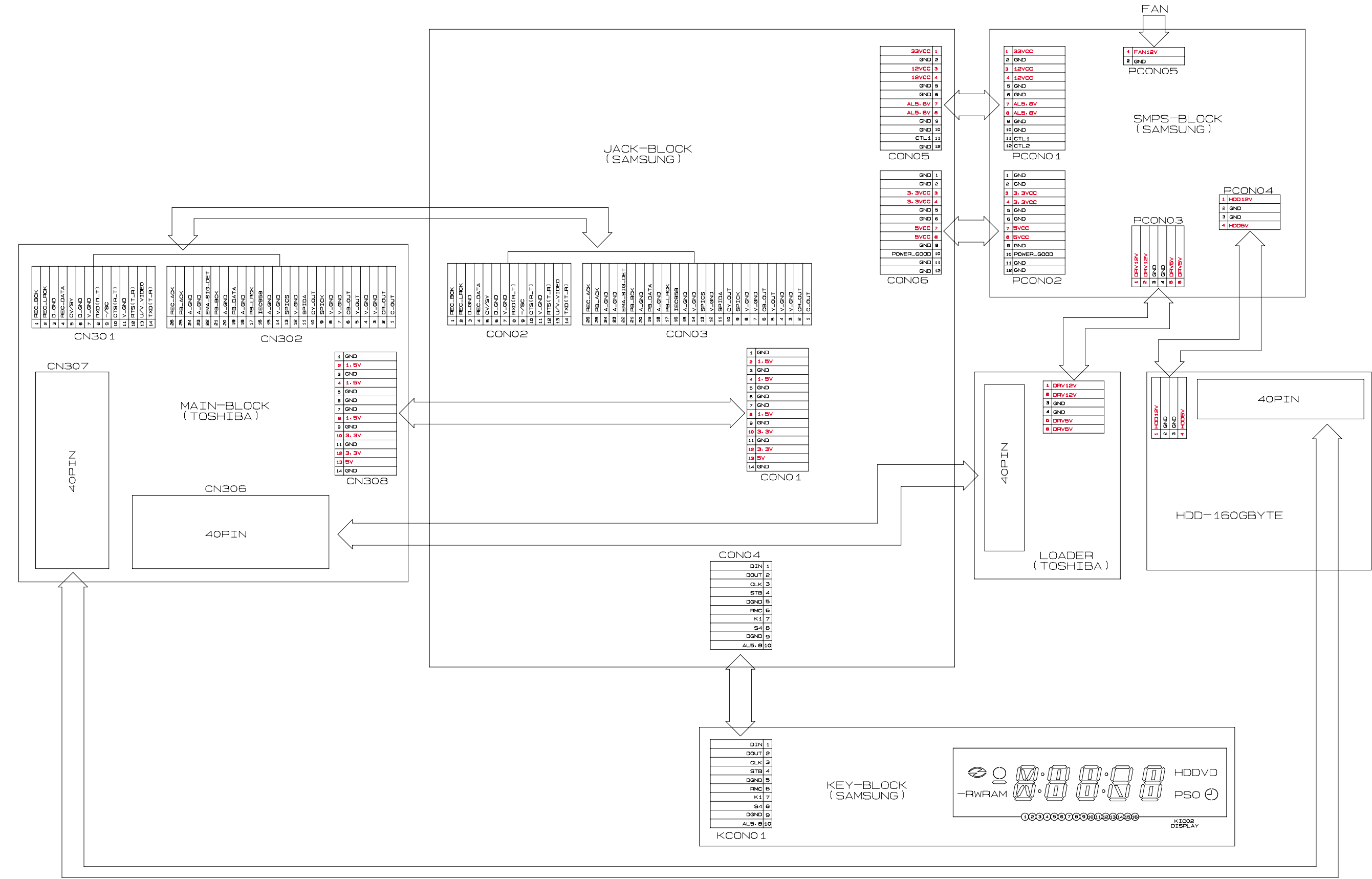
MEMO

10. PCB Diagrams

10-1 S.M.P.S. PCB

COMPONENT SIDE

D-R150/RD-XS24-SMPS
REV : 01 AK41-00453A
2005-08-18

CAUTION

PCON02
1: GND
2: GND
3: 3.3VCC
4: 3.3VCC
5: GND
6: GND
7: 5VCC
8: 5VCC
9: GND
10: POWER-GOOD
11: GND
12: GND

PCON01
1: 33VCC
2: GND
3: 12VCC
4: 12VCC
5: GND
6: GND
7: AL5.8V
8: AL5.8V
9: GND
10: GND
11: CTL1
12: CTL2(NC)

PCON04
1:HDD12V
2:GND
3:GND
4:HDD5V

PCON03
1: DRV12V
2: DRV12V
3: GND
4: GND
5: DRV5V
6: DRV5V

THE CAUTION OF HIGH VOLTAGE

RISK OF FIRE - REPLACE FUSE AS MARKED

E:2A 250V
AF:T2AH250V

CONDUCTOR SIDE

DANGER PART

10-2 Main PCB

COMPONENT SIDE

CONDUCTOR SIDE

TOSHIBA

G70D00000201
PC-DIG-G100
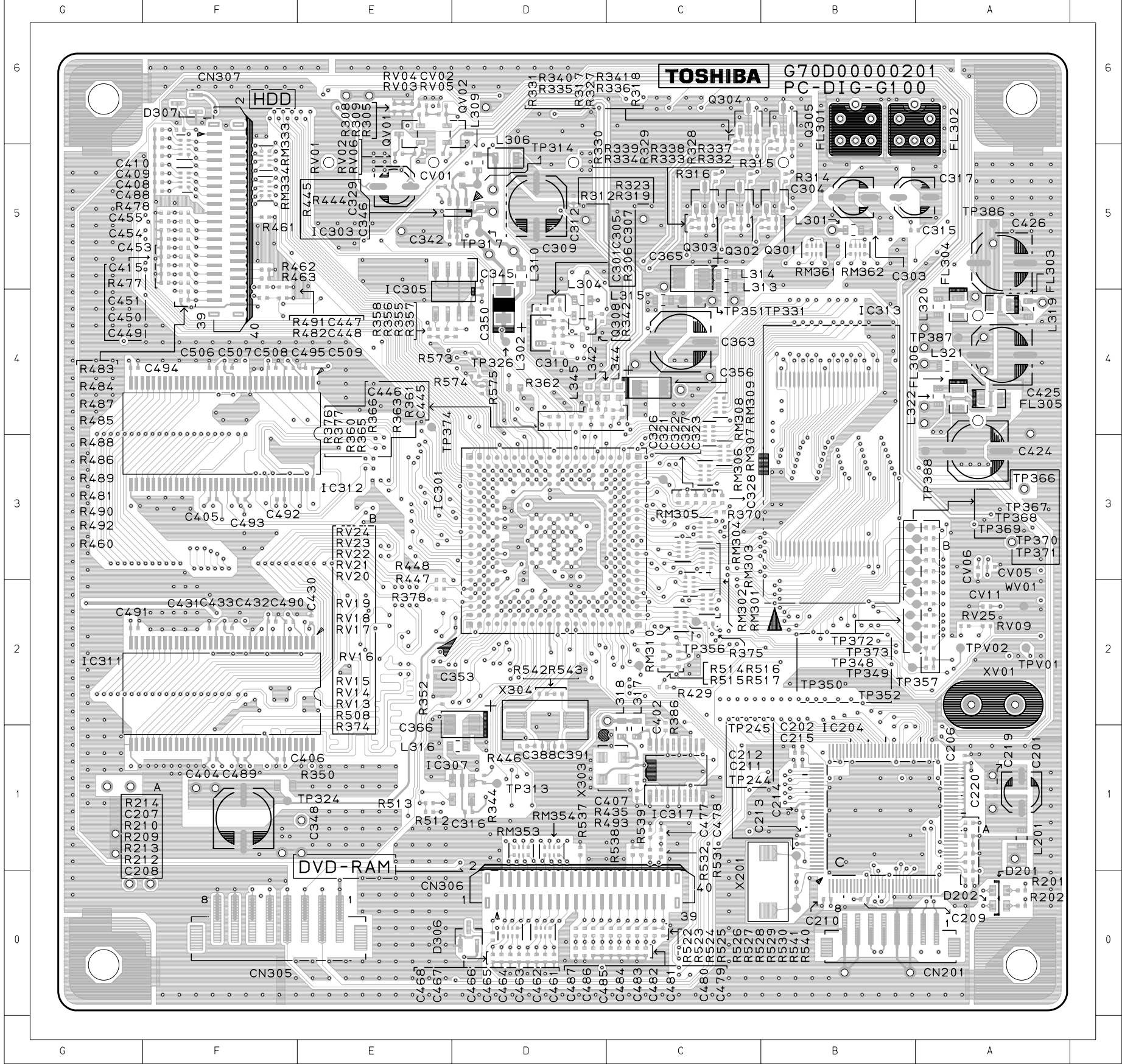
10-3 Jack PCB

COMPONENT SIDE

REV : 01
AK41-00451A
2005-08-12

D-R1507RD-XS24-JACK
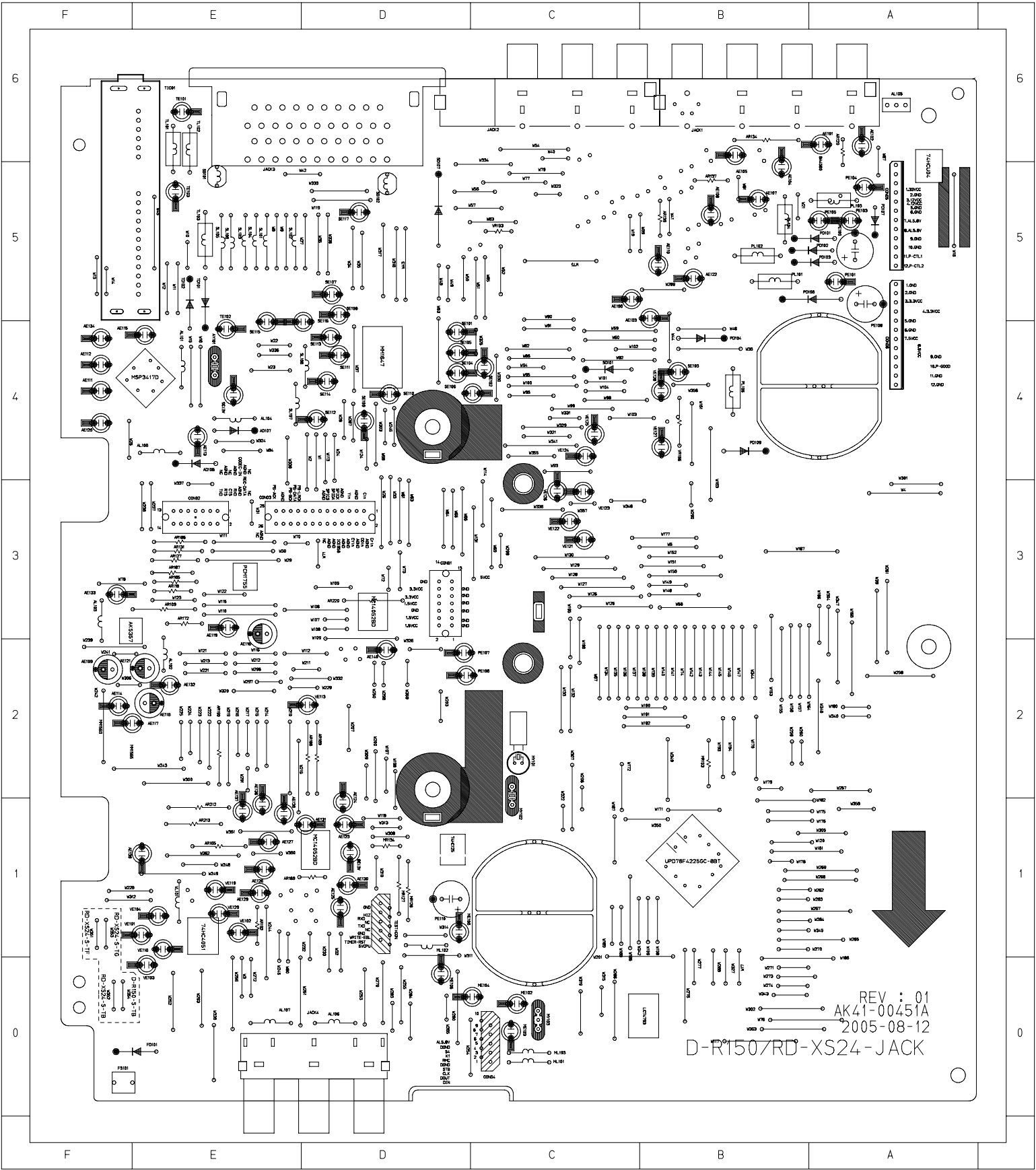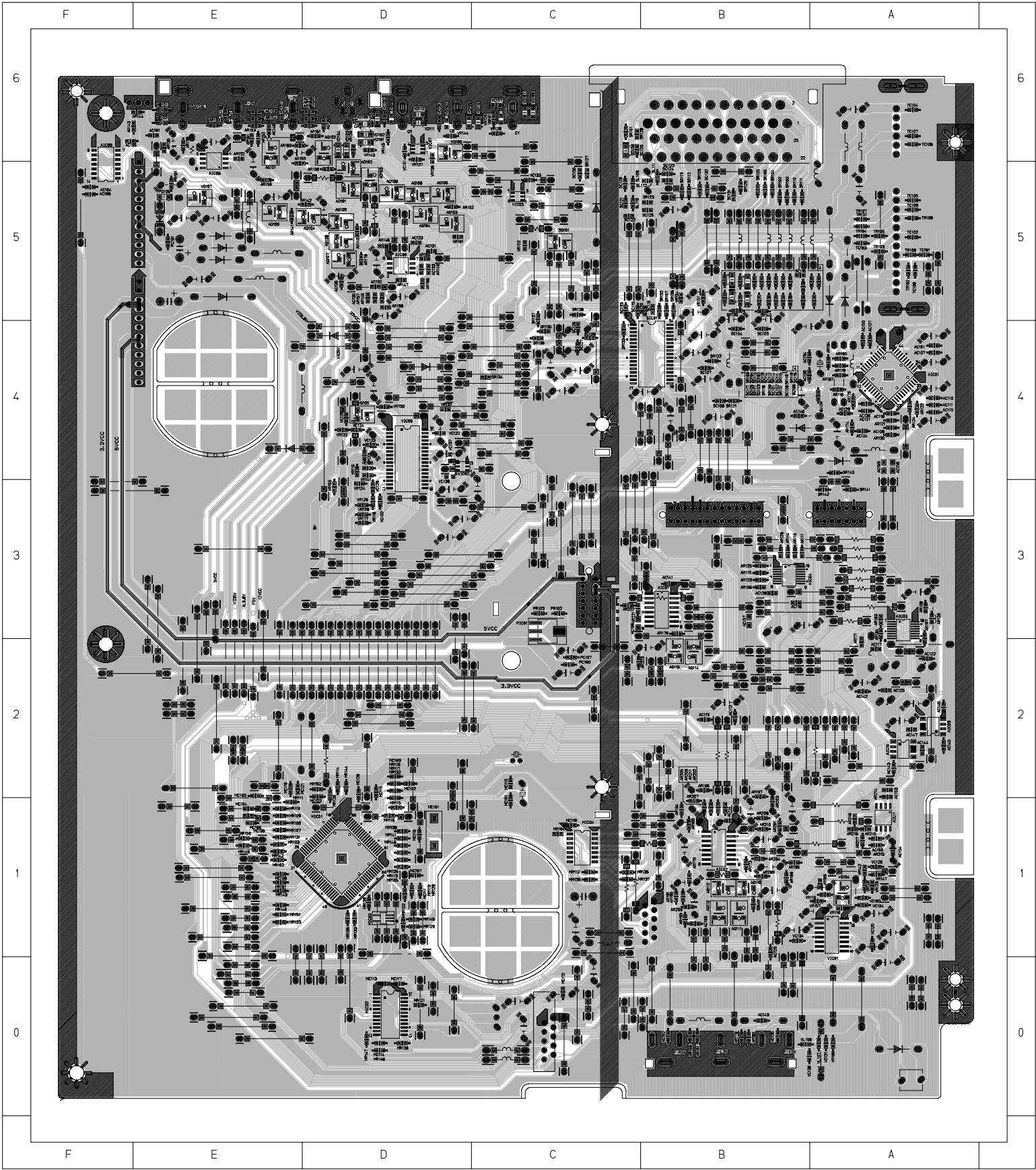
CONDUCTOR SIDE

10-4 Key PCB

COMPONENT SIDE

D-R150/RD-XS24-KEY
AK41-00452A
REV:01
2005.08.09

TRAYDET

EJECT   REW   STOP   PLAY   FF   P.SCEN   REC   CH−   CH+
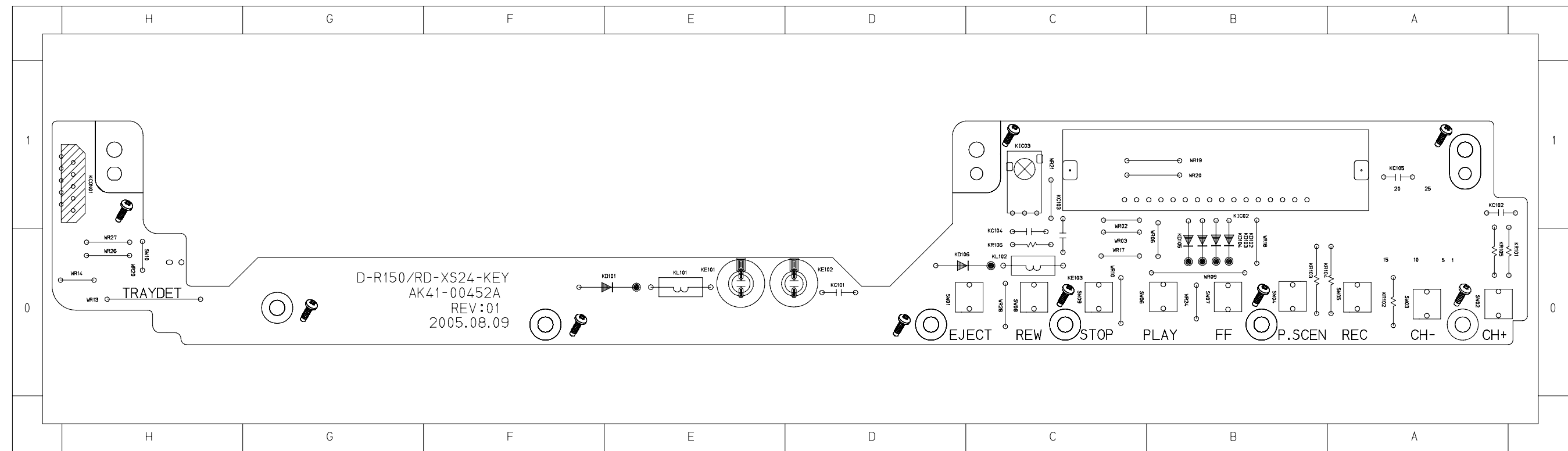
CONDUCTOR SIDE
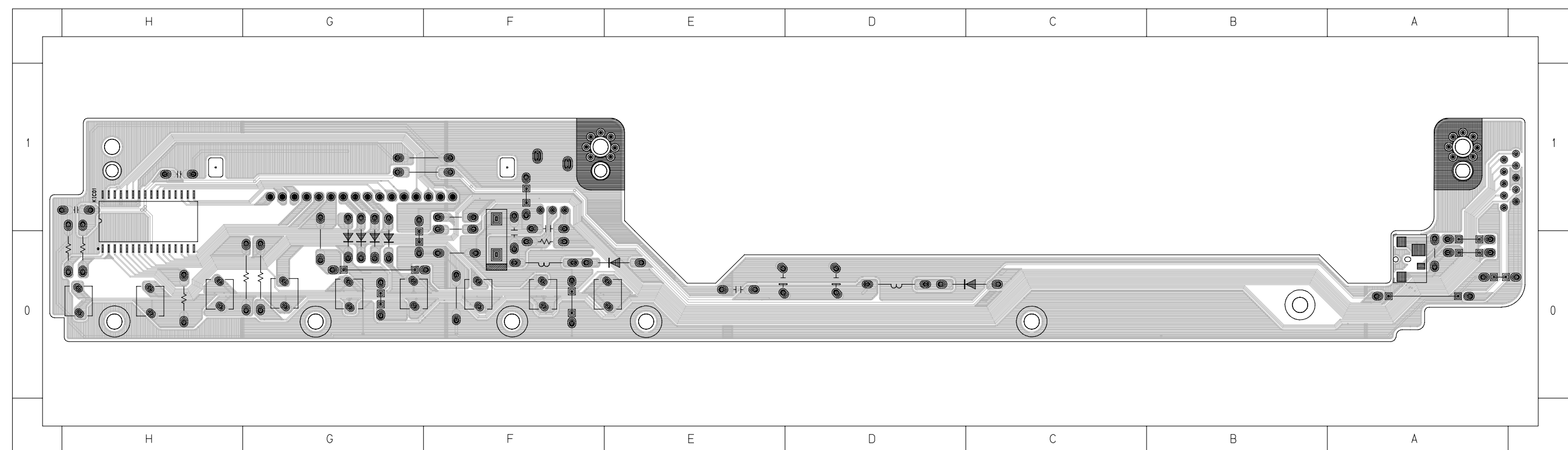
11 Schematic Diagrams

11-1 S.M.P.S. (SMPS PCB)

11-2 Main (Main PCB)

IC301	
TB	uPD61175F1
TG\TF	uPD61177F1

IC301

EMMA2RLL

11-3 Audio (Jack PCB)

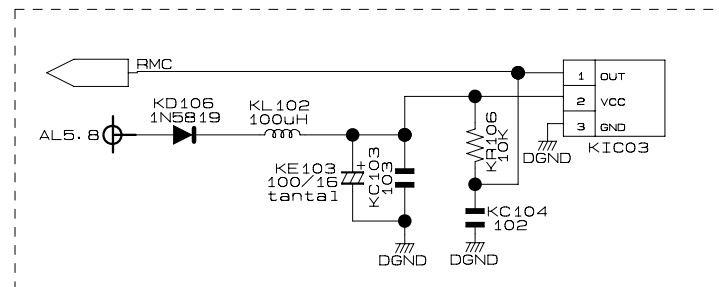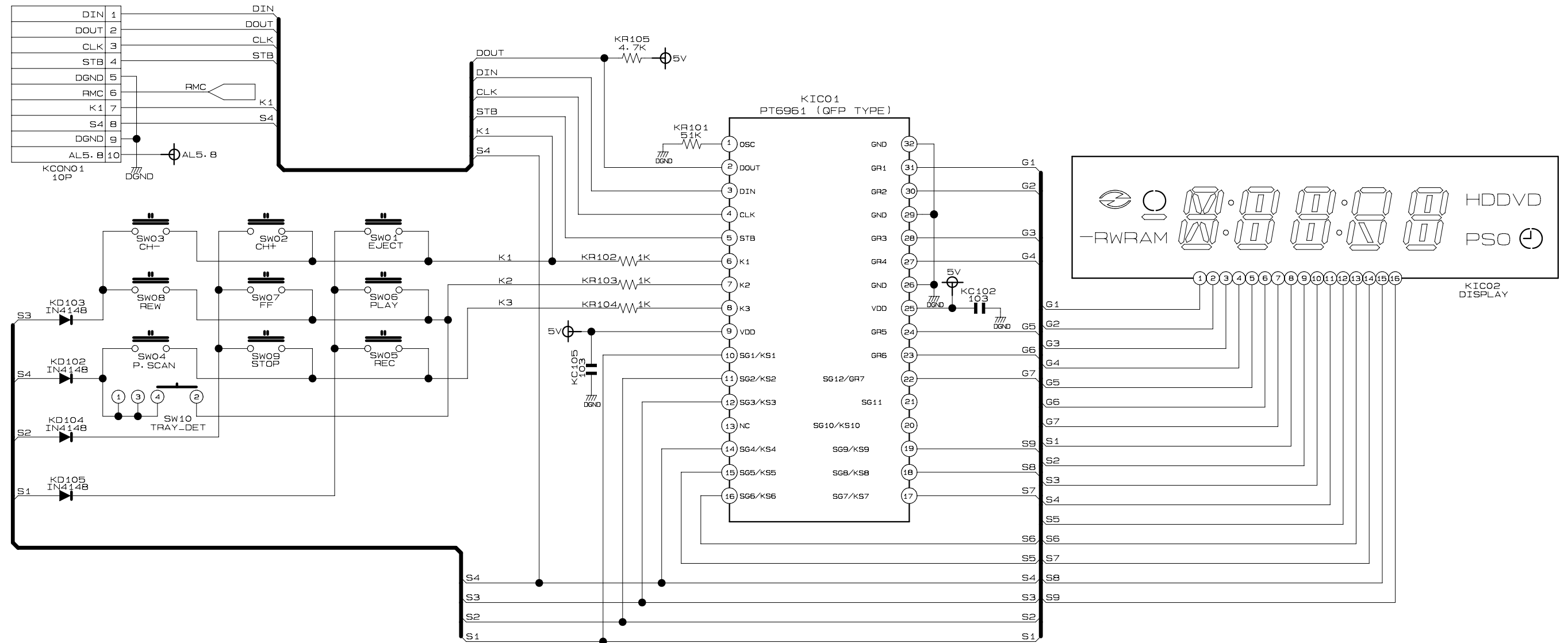## 11-4 Video (Jack PCB)
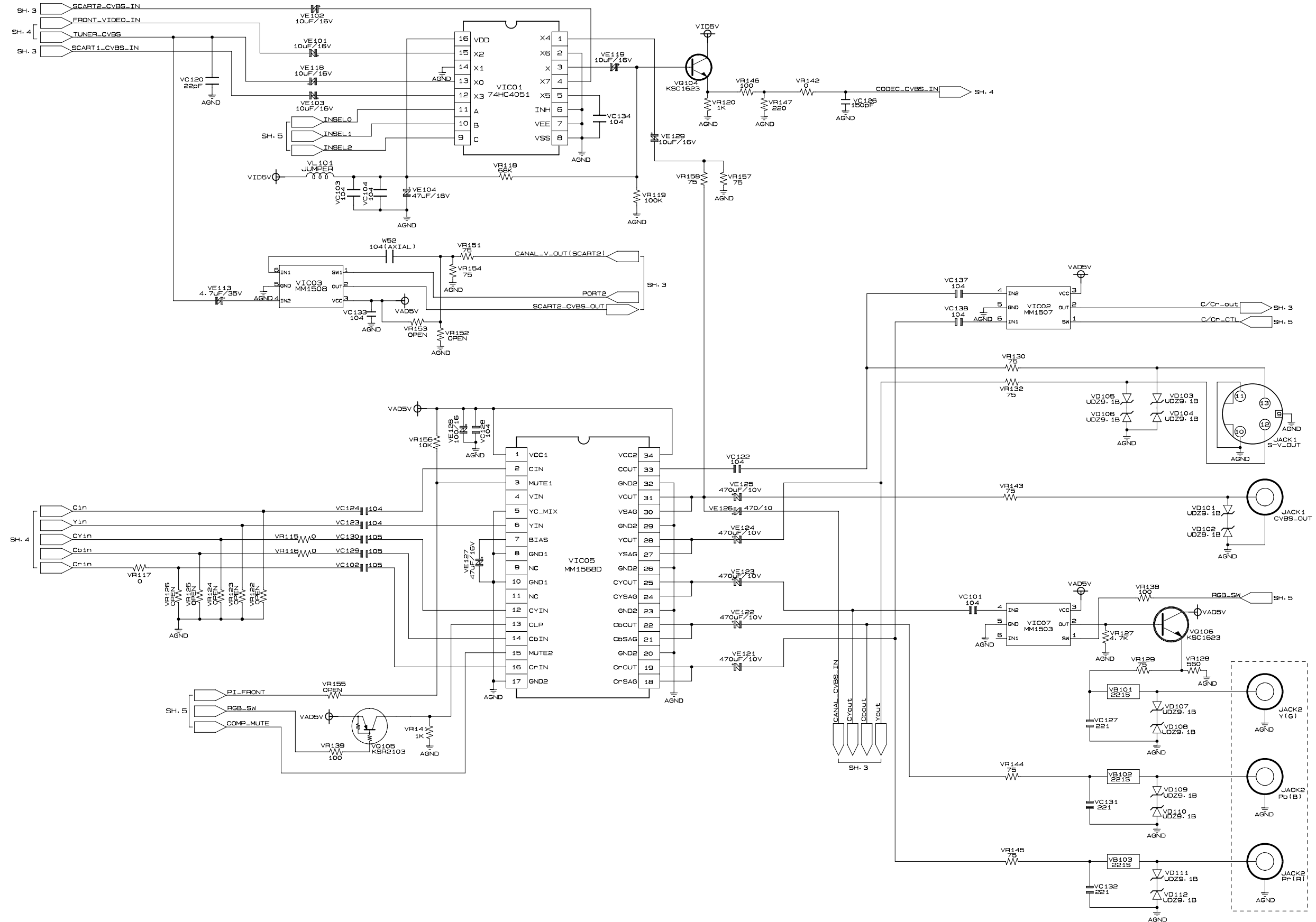
11-5 AV-switch & Scart (Jack PCB)
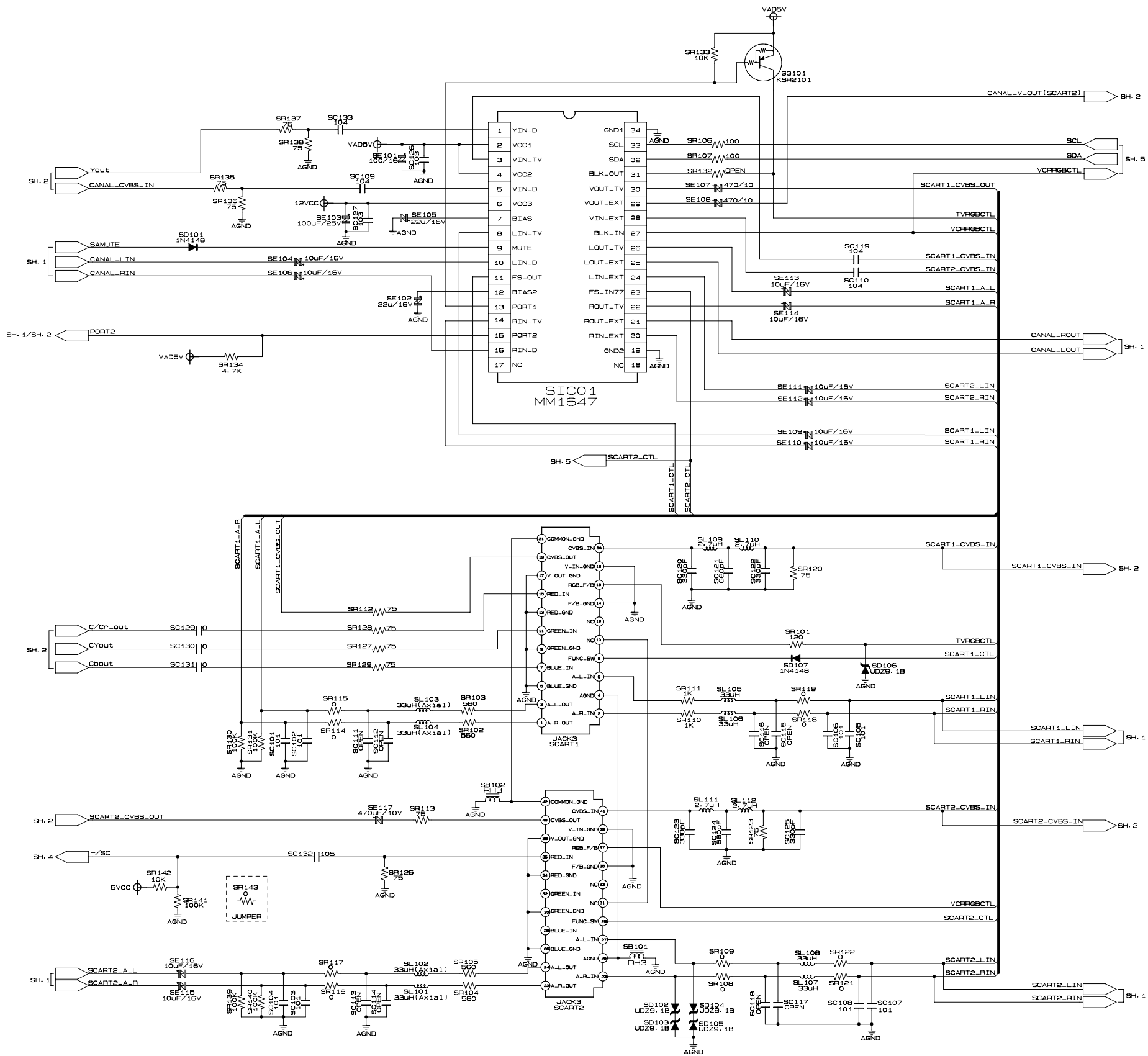
11-6 Tuner/Front-in/Connection (Jack PCB)

TICO1
TUNER

TUNER

JACK/SMPS CONNECTION

FRONT INPUT

JACK/KEY CONNECTION

JACK/MAIN CONNECTION

11-7 Micom (Jack PCB)

11-8 Key (Key PCB)

MEMO